

# THE MACDONALD COLLEGE MAGAZINE.

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## **EDITORIAL**

The arrival at the end of September of the various members of the School of Agriculture—the last of the three Schools to assemble—constitutes a notable occasion in the history of Macdonald College. Each year since Professors began to deliver lectures and Students to fill note-books in her class-

rooms, the Agricultural Students have been reinforced by a fresh class. With the coming of this year's Freshman Class their numbers are complete, and the Student-body is for the first time at its full strength. There is, we believe, every reason to think that the harmony which has hitherto existed

between the various Classes will continue to be a feature of the College life. Nor is there any ground for thinking that the feelings of warm friendship with which the denizens of the Men's Building have always regarded the two Residences across the Oval, are destined to cool as the Session advances.

The presence, however, of the full complement of Students at the College has advantages which will undoubtedly make themselves felt from the very first. The disproportion which has hitherto existed in the numbers of the Girl Students and the men respectively will now be materially lessened. The College will feel itself stronger, more able to meet the various demands made upon it, and to answer to the numerous expectations of the outside world, and of its own members. Those responsible for the production of the Macdonald College Magazine feel, in particular, that they are justified in looking for a much greater measure of practical help, in the form of contributions literary and artistic, now that both the Residences are full to overflowing, than two years ago when the Students put forth their first literary bantling, the "Trifolium". The Editorial Board, let us hasten to add, has every cause to congratulate itself on the unflagging support which it has always met with from all sections of the College in the form of subscriptions. And the Faculty has responded nobly to the call for "copy", though its time is limited and the demands on it numerous. But we look during the coming Session for as generous a response to the Editorial cry for contributions, from all classes of the Student-body.

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The Session which has just begun for the School of Agriculture possesses

a peculiar and ever-increasing interest for one of its component Classes—we refer to that one which is destined to be the first Graduating class in Agriculture, Class '11. Beginning its career three years ago with a membership of thirty-nine, the Class has, as is usual with such bodies, declined considerably in numbers since its first assembling. The eighteen men who have now begun the last and, both for themselves and for the onlookers, the most exciting lap of their race,—a race from which many a starter has dropped out—have undoubtedly a strenuous half-year before them. In addition to work in lecture room, laboratory, and Study, culminating in the final Examination struggle, a large proportion of them have on their shoulders the responsibilities of various offices, connected with College life, the discharge of which necessitates a continuous drain on the leisure time of the holders thereof. But as has been frequently remarked, a student derives more benefit from his last year of College life than from all the others, and there is no doubt that a student's fourth year at Macdonald College will be a valuable training for his subsequent career. That every member of Class '11 may have a uniformly successful Session, and a triumphant departure from their Alma Mater, is the earnest wish of all their numerous friends.

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The fact that the School for Teachers at Macdonald College constitutes the Normal School for the Province of Quebec suffices to give it a peculiar interest for those interested in the cause of Education. And in these days, when to be uneducated, or to be poorly educated, is, generally speaking, to be a failure, the question of an adequate

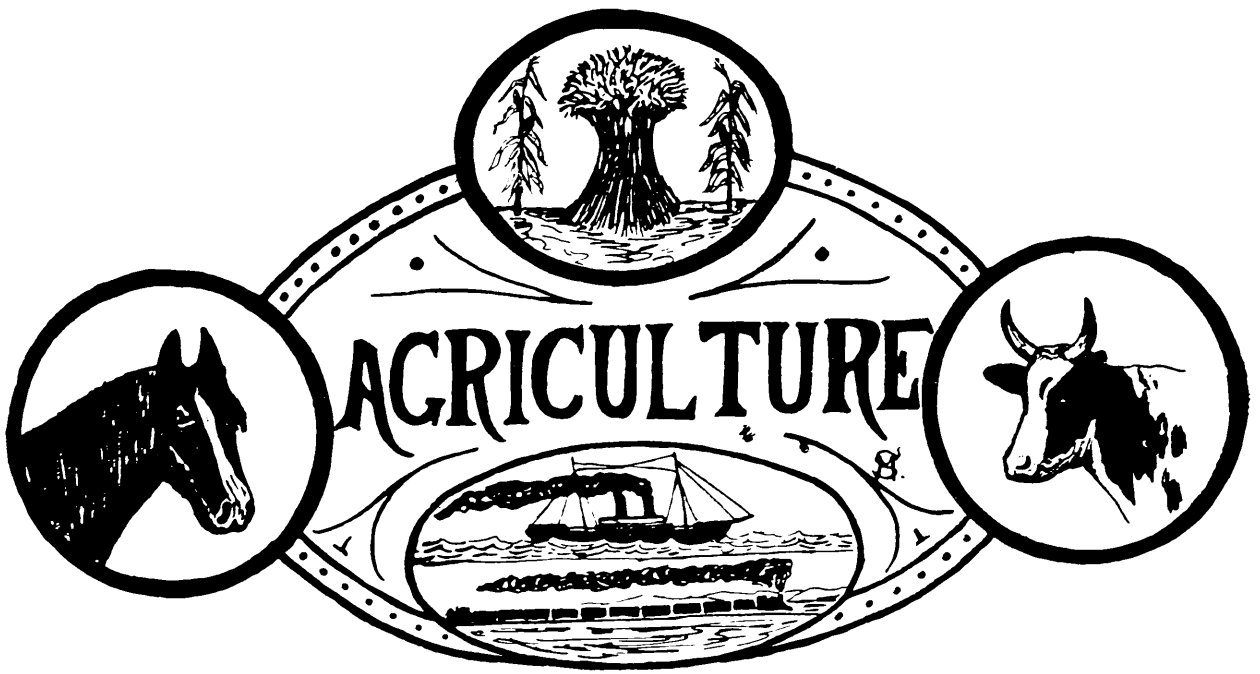
supply of trained teachers for this large Province is one of immeasurable importance for the great body of its inhabitants. The best friends of Education in this Province were not unreasonably apprehensive lest the recently increased cost of board at this College might go far to diminish the numbers of a School already insufficient to meet the demands of the Province. This unfortunate though perhaps necessary innovation has had less effect than might have been expected in reducing the number of students. Probably another cause has been more potent, as it is infinitely less defensible. We refer to the new regulation in vogue, by which every intending teacher taking a Course at Macdonald College is compelled to sign a promise to teach in the Province of Quebec for three years after graduation.

This is an attempt to remedy a wrong state of affairs in the wrong way. The larger salaries paid by other Provinces to trained teachers are none too large; those given very often in this one are such as Wackford Squeers might blush to proffer. The School Trustees of the Province of Quebec are as well able as those of any other Province to pay their teachers a living wage, and the obvious and only justifiable means of keeping their teach-

ers in their own Province is to pay them the market price of their labour.

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It was the hope of a very large proportion of the Students in the School of Agriculture last Spring, that work would be found for them in the various Departments. The great majority of them experienced keen disappointment when it was announced that only fifteen or so students could be employed at the College during the Summer, whereas in previous years double that number had been retained. We think that this is a matter which may well receive the earnest attention of the College authorities. In view of the fact that the aim of an Agricultural College is, or should be, to turn out graduates not only well equipped as to the theory, but also thoroughly conversant with the best available practice of their profession, it seems a pity that more students could not have remained at the College to take part in the Experimental and Demonstration work. All sincere admirers of the College,—and they are many,—will join us in hoping that the wisely generous policy which characterized the work of erecting and equipping the Institution, will not fail to be in evidence in its administration in the years to come, more especially along the practical lines indicated above.



## Humus, or Vegetable Mould.

### A Fundamental Factor in Soil Fertility.



THE fertility of the soil depends largely upon the amount and quality of vegetable matter it contains."

Such a statement, coming as it does from one of our most successful farmers, the late William Rennie, Sr., is surely calculated to arouse more than a passing interest in the subject in hand. Yet the theme is no new one, for Pliny tells us that the ancient Romans sowed lupines in September, plowing them under the following May; and on another occasion he remarks that, "In places where no cattle are kept it is advantageous to manure the earth with stubble or even fern." In many parts of Europe the owners of land have insisted, since a very early period, that no straw shall ever go off the land. All must be consumed upon the farm, and applied to the land in some form, as must also be done with all the manure produced by the animals kept. Upon this fundamental basis their agriculture has been

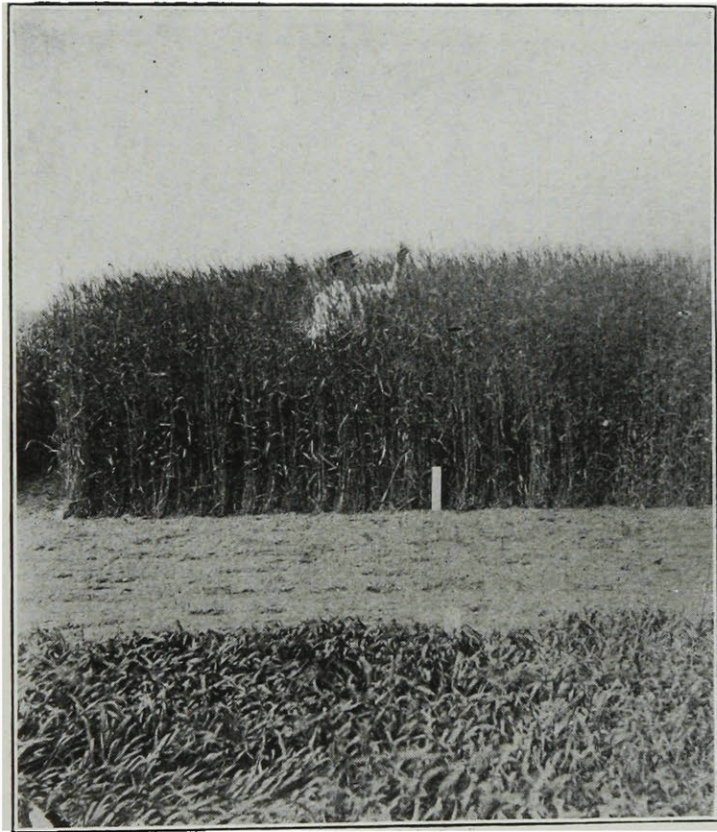
built up, with the result that fields there which were old a thousand years ago, so far from being worn out, would put to shame many of our best fields of comparatively virgin soil. To explain, if possible, why the foremost agriculturists, ancient and modern, concur in placing humus, or vegetable mould, in the front rank of importance as a factor in soil fertility, is the purpose of this article.

First let us consider Nature's method of maintaining soil fertility. Take a walk through a piece of virgin woodland, and examine the soil upon which you tread. Everywhere is a carpet of dead leaves, decaying brush and herbage of all sorts. Stoop down and remove the top layer: underneath you will find the dark-coloured vegetable mould, generally known as "humus." Nature's method, then, amounts to this: Every year the surface soil receives additions of organic matter in the form of leaves and other debris of vegetable and animal life.



These are then gradually reduced by the action of myriads of micro-organisms first to dark-coloured humic bodies, and finally to ashes as completely as though they had been burned. But during the process they have yielded their substance to nourish succeeding generations, besides serving several other useful purposes. Thus the cycle is repeated through numberless years, the soil becoming ever richer, and able to produce an ever increasing luxuriance of growth.

the fact remains that the crops will not grow. What then is the trouble? It is this:—By continuous cultivation a large amount of oxygen has been admitted; the activities of the micro-organisms which break down and consume the organic matter in the soil have, in consequence, been greatly stimulated, with the result that the vegetable content has speedily suffered complete combustion. As no precautions have been taken to supply more, the soil is left devoid of humus. That which



FALL RYE. A USEFUL CROP FOR TURNING UNDER.

But then the farmer steps in, clears the land, and begins to crop it, too often in this country with a continuous succession of wheat or other grain crops. For a few years he has splendid returns, but the inevitable falling off soon begins, and continues, until finally cultivation of that field ceases to be profitable. The chemist tells him that the soil contains enough plant food to grow good crops for hundreds of years, but

was a rich, sandy loam has become thin, light, and leachy; that which was a strong, fertile, mellow clay has become a hard-baked, lumpy, unkind soil, impossible to plough or cultivate with any degree of satisfaction. In other words the soil has "lost heart"—has become "worn out."

Since the chemist tells us that even worn out soils contain large amounts of plant food, we must attribute their



failure to grow good crops to the condition of their tilth or texture. The only remedy is to resort to Nature's method, namely, that of incorporating vegetable matter with the surface soil. Succeeding paragraphs will deal briefly with the most important effects of the addition of humus.

*Humus improves texture.*—A clay may contain everything needful to feed a bumper crop, but, if this nutriment is locked up in lumps impervious to feeding roots, it is quite useless. A sand may contain plenty of plant food, but,

the direct cause of many of the other benefits resulting from the addition of humus, it is of the first importance. It is interesting to note here the old idea as enunciated by Jethro Tull, that "tillage is manure." The effect of highly intensive tillage is to "fine" a heavy clay soil in much the same way as humus fines it, the result in both cases being an increased pasturage for the roots of plants.

*Humus increases absorption and retention of moisture.*—Because of its porous texture, a soil containing plenty



SWEET CLOVER. AN EXCELLENT GREEN MANURE.

if it will not retain enough water to dissolve it, the plants must starve. Humus acts as a weak cement, and holds together the particles of soil, thus serving both to bind a coarse-grained sandy soil, and, by forming aggregates of the finest particles, to render the texture of a clay soil more open. It gives "body" to sandy soils, and, by breaking up the lumps in clays, greatly increases the feeding area available for roots, besides making the soil easier to work and less liable to bake or crack. Because the improvement of texture is

of humus will absorb and retain water like a sponge. In three years' experiments King found that manured fallow ground contained eighteen tons more water per acre in the first foot of soil than similar land unmanured, while the total gain of water in the first three feet of soil was thirty-four tons. Considering the insufficiency of the rainfall during the growing season to supply the immense amount of water required by growing crops, and also the large number of crop failures that are owing to drought, it is evident that few soils

can dispense with this moisture-holding quality which humus imparts.

*Humus prevents leaching.*—Leachiness of soils depends upon several conditions, not the least important of which is the amount of vegetable matter they contain. This has been shown by analyses of drainage water at Rothamsted, where the addition of humus to the soil appeared to greatly reduce the loss of nitrates. To apply easily soluble fertilizers, especially nitrates, to leachy soils is almost as unprofitable as attempting to fill a leaky tub. The fundamental treatment for such soils is the addition of humus.

*Humus supplies plant food.*—The soil absorbs a little nitrogen from the air in the form of ammonia, and some free nitrogen is fixed by micro-organisms, but the great source of soil nitrogen is its content of decaying vegetable matter. Every year a certain proportion of the nitrogen in this organic matter is nitrified by the action of microscopic ferments, and made available for plant food; so that while few, if any, agricultural plants feed directly upon humus, yet, under natural conditions, it is from the humus that they obtain the greater part of their nitrogenous food.

*Humus stimulates chemical activity in the soil.*—During the process of decay large amounts of carbonic acid are given off, and this is of great importance in the disintegration and dissolving of the crude components of the soil. There are also formed various other acids and microscopic ferments, all of which help to release and render available plant food. Thus, besides supplying plant food itself, the addition of humus sets in motion a series of activities which greatly affect the productivity of the land.

*Humus warms the soil.*—The power of soils to absorb the sun's rays depends

very much upon colour; with black soils the absorption is almost complete; it is least of all for those which look distinctly white. Schubler states that, other things being equal, a dark-coloured soil is about 8° warmer near the surface than a light-coloured one. This difference in temperature, due to colour, may have a marked influence upon the growth of a crop, especially upon its germination. Dark soils, rich in humus, are usually the warmest and earliest. Light-coloured soils may be made dark by the addition of humus.

How best to increase the humus content of the soil is a wide subject in itself, but we shall venture a few suggestions.

Undoubtedly, farmyard manure, if it can be procured, will renew the "heart" of old worn-out soils quicker than anything else. Often, however, a sufficient amount is not available, and we must resort to "green manuring," that is, the growing of crops for the purpose of plowing them in. In one sense, green manuring is a common practice, for it is evident that, where a good rotation is followed, a large amount of organic matter is turned under incidentally in the form of roots, stubble, and aftermath of useful crops. But with worn-out soils a more drastic method is necessary, and crops must be grown for the especial purpose of turning them under. The crops commonly used are divided into two classes: "nitrogen gatherers" and "nitrogen-consumers."

The nitrogen-gatherers belong to the legume family, and of these the most useful for our purpose are sweet clover, red clover, crimson clover, vetches, and cow-peas. Most of these are deep-rooted plants, with the power of securing food where many other plants would languish for lack of nourishment and

moisture. They should be turned under when in early bloom, before the stalks have become woody. At this stage they will break down readily, and quickly give to succeeding crops, in an acceptable form, the materials of which they are composed. The ability of these plants to gather nitrogen through the agency of bacteria living on their roots adds considerably to their value as soil enrichers.

The nitrogen-consumers, on the other hand, add no nitrogen to the soil, but instead depend on it for their own supply. Apart from this they are equally valuable. Of this class the most useful are rye and buckwheat. These crops do well on the poorest soils, often where it would be impossible to secure a catch of clover. Rye should be turned under when the heads begin to shoot, buckwheat when in early bloom.

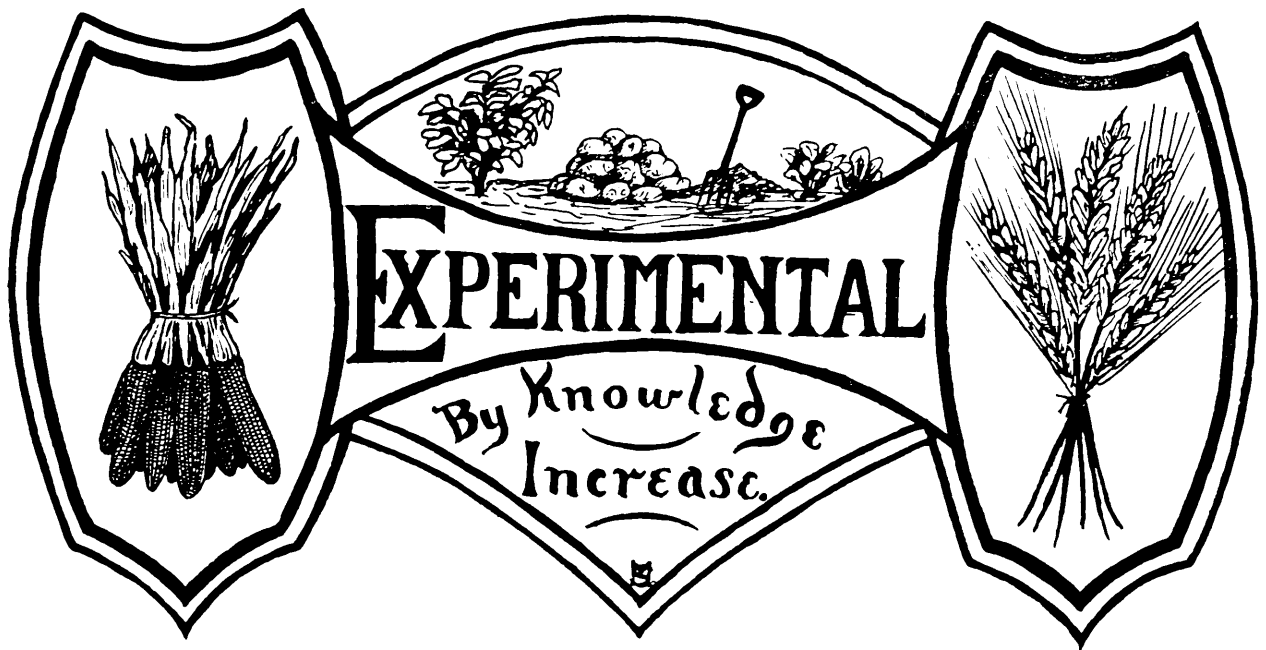
After a green crop is plowed in, the land should be immediately rolled with

a heavy roller, thus pressing the mass of green vegetable matter into firm contact with the subsoil. This is done to induce capillarity, for without moisture the necessary fermentation and decay cannot commence. The rolling should, of course, be followed by cultivation to prevent evaporation from the surface of the soil.

In conclusion we wish to suggest, first:—that the comparative unproductivity of the major portion of our farm lands is due not so much to a lack of plant food as to the lack of humus; second:—that the number and variety of ways in which, as has been shewn, humus benefits the soil, is a strong recommendation to farmers with unkind soils to give green manures a trial. Undoubtedly commercial fertilizers have a place in the economy of farming, but we cannot declare too strongly that the importance of humus is fundamental.

R. N.

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## Experiments in Feeding Dairy Calves.

By H. BARTON, B.S.A., Professor of Animal Husbandry, Macdonald College.



IN the early days of the Farmers' Institute in Eastern Ontario, and some parts of Quebec, the question of feeding dairy calves was a favourite topic for discussion. The importance of skim milk in the rations was much emphasized. The farmers were cautioned against feeding a very heavy ration, even should the calf be able to assimilate it, the danger being in the calf developing too much fat and thus interfering at an early stage with the milk-producing tendency.

Undoubtedly a great deal of good has been accomplished by such teaching, and yet in some instances it would seem as though calf feeders had been encouraged along the line of least resistance, and the so-called growing ration quite overdone. Experience and experiment have repeatedly demonstrated that the most growth is made when the calf is in fairly good condition. Skim

milk as the basis of the ration has simplified economical and successful calf feeding to a large extent, but it must be used judiciously and in combination with some suitable concentrated feed. Where skim milk is available there can be no excuse for producing the dry haired runts, of which, at this time of the year, we see so many decorating the pastures on the average farm.

When skim milk is not available the problem of raising calves successfully and with economy becomes much more difficult.

One of the questions most frequently asked is "What makes a good substitute for skim milk?" Various feeds have been strongly recommended and widely advertised. With the hope of working out some suitable rations and in order to determine the true worth of a number of feeds some experimental work was started at the College two years ago and continued through this



year. The work is not completed yet, but has gone far enough to furnish us with some reliable results.

Thus far skim milk has fully justified the apparently extravagant claims that have been made for it. Without exception the ration with it included gave the thriftiest calves and the cheapest gains. The accompanying illustrations will serve to show something of the difference in the general appearance of the calves.

one and a half pounds per day at a cost of nearly ten cents per pound.

In one experiment whole milk was gradually dropped and Bibby's Cream Equivalent, one of the best known prepared calf feeds on the market, was substituted and no skim milk supplied. The calf was very thrifty at the time of the change, but as the accompanying photograph, taken some time afterward, will show, the calves on the other rations were far superior. It may be



CALVES FED ON SKIM MILK RATION AS OUTLINED TO BE THE MOST SUCCESSFUL PRACTICE.

We may say as yet no feed has been found that will make a complete substitute for skim milk. In two cases the calves were fed whole milk until they were a month old in order that they might get well started and perhaps thrive better on the prepared ration afterward. While the calves were getting whole milk they naturally did exceptionally well, the cost being the objectionable factor. They received on an average from ten to fifteen pounds of whole milk per day, and gained nearly

said that the poorest calf shown is a fair average calf as we find them throughout the country. On this ration less than half the gains were made as compared with whole milk during the previous period and the cost ran even higher than with the whole milk—charging Bibby's meal at the quotation price \$3.75 per cwt. In combination with skim milk after the whole milk period in another experiment Bibby's meal gave much better results—the calf making practically the same

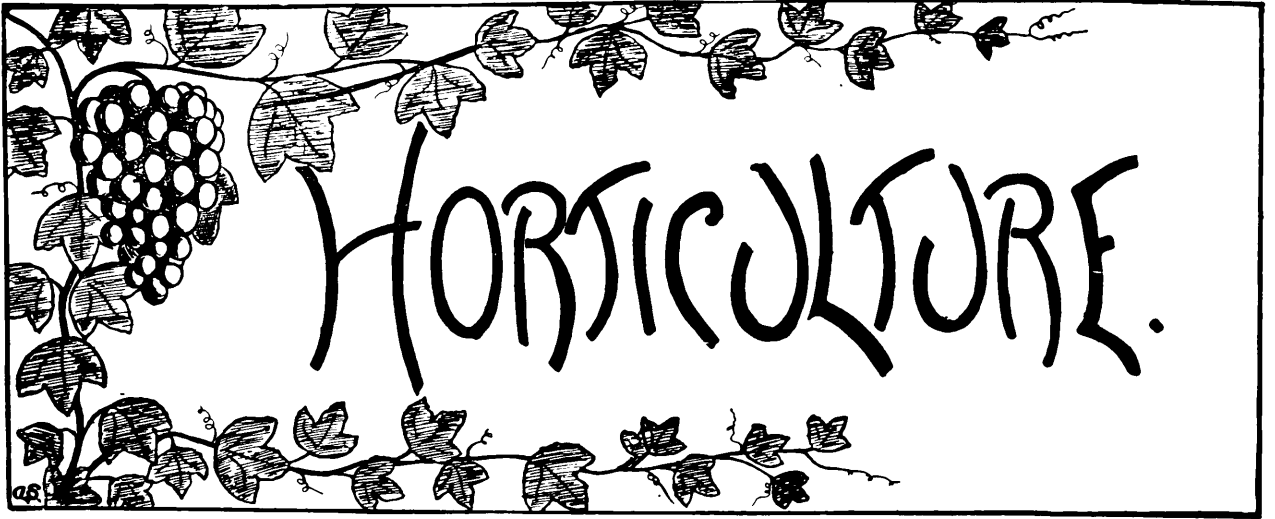
gains as on the whole milk and the cost was reduced from 9 cts. and 10 cts. on whole milk to 5.6 cts. on part whole milk as the change was being made, and then to 3.8 cts. when the skim milk and Bibby's meal were fed without any whole milk. Blatchford's calf meal was handled in the same way and gave somewhat similar results, Bibby's proving somewhat more fattening in its nature. These results go to show that such feeds as Bibby's Cream Equivalent cannot be depended upon as milk substitutes, but in combination with skim milk, even in limited quantities, will give good results. However, with other rations, in which were included skim milk and ground linseed meal, the calves were even better and made the cheapest

gains of the lot when skim milk was charged at 15 cts. per cwt. and linseed meal at \$3.00 per cwt., the cost running as low as 3 cts. per pound.

The most satisfactory practice so far has been to feed the calf the whole milk, about ten pounds per day, for the first ten days or two weeks of its life. Then very gradually substitute skim milk for the whole milk and supplement with linseed porridge or linseed jelly, beginning with only a spoonful of the porridge and gradually increasing to one half a pound by the time the calf is nearly five months old; and always keeping the allowance of skim milk within twenty to twenty-four pounds. Along with this the calf should have a little dry bran and oats and also what green clover hay or alfalfa it will eat.



CALF SIX MONTHS OLD, FED ON SKIM MILK  
AND GROUND FLAX SEED.



## The Forcing of Musk Melons Under Glass.

By ARCH. H. WALKER, Greenhouse Manager, Macdonald College.



THE cultivation of this luscious fruit in out-door conditions is limited to certain favoured sections of the country where soil and weather are entirely favourable to its growth. These conditions are found, for example, in a certain area of the Island of Montreal. There are but few of our readers, we imagine, who have never heard of the famous Montreal melons. The problem of how to grow melons is only to be solved for those living in less favoured districts by growing them under glass.

In the Northern parts of Europe melons are grown entirely in greenhouses specially built for that purpose. Apart from this, however, even in districts highly favourable to their growth out of doors the season lasts but a very short time, much too short a time to satisfy a public thirsting for a slice of the luscious fruit long before, and long after Nature is willing to be bountiful. Thus even on the Island of Montreal the aid of the greenhouse has to be called into requisition.

Before proceeding to discuss the best method of cultivation of the plant, I must premise that while the growing of melons out of doors demands a great deal of care and judgment, especially in caring for the young plants in the hotbed, and for some considerable time after they have been planted permanently in the frames, their cultivation in the greenhouse calls for at least as much care in some ways and decidedly more attention in others. A perusal of this article will render this obvious. The treatment outlined here is no dream. Growers have made it a constant practice where fruit is required both early and late on in the season in unfavourable districts.

The style of house used for the growing of the crop in both private and commercial places in the Old Country is a narrow, short building with open top and side ventilation, and containing benches on each side 2 inches high, and a path in the centre. It is considered necessary for the successful forcing of melons out of season that the benches should have bottom heat. Accord-



ingly, the benches are built so that the necessary piping can be placed underneath the other heating pipes, being situated so that they do not interfere with the growing crop. Since the plants have to be trained up the slopes of the house from either side some form of support is necessary. Wires are stretched along the house about eight inches apart and at least one foot from the glass, the wires being kept in position by fittings placed at intervals to

the tank is always full, and the water always as nearly as possible at the same temperature as that which is maintained for the growing of the crop.

SOIL.—The best available soil is none too good for this crop. To have such a soil it is necessary that the grower look ahead of him. He will, for example, always have on hand a stack of rich, turfy loam which has been cut from an old pasture the year before,



MUSK MELONS GROWN IN THE GREENHOUSE, MACDONALD COLLEGE.

the sash-bars through which the wires pass. The supply of water is another matter that has to be considered in connection with the construction of houses devoted to the forcing of a crop such as the one under consideration. Water supplied directly from the main source, say in April or October, is too cold. To overcome this difficulty a tank is built in the most convenient place in the house. This tank is fitted with an automatic feed; in this way

no manure being used in the make-up of the stack. The reason given for this latter prohibition by growers is that manure encourages too rank a growth. In chopping down the stack for filling the benches the turf is broken up roughly, and the benches, which should have a soil depth of at least eight inches, are filled with this soil, which is slightly mounded towards the centre where the plants are to be placed. The whole is then firmly pack-

ed and put into condition for receiving the plants.

**SOWING OF SEED.**—While it is quite possible to raise the plants by other methods of seeding, the best way, nevertheless, is to sow in pots. Three-inch pots are a good size to use. These are first of all well drained with broken pots, a covering of moss being put over the drainage to keep the soil from mixing with the draining materials. The pots are then three parts filled with a mixture of finely chopped turfy loam and sand, two seeds are placed in each pot, and the seed covered with the same soil. Two seeds are placed in each pot so as to ensure getting a plant in every one. The pots are then placed in the greenhouse and watered, and a temperature of not less than 70 degrees maintained, with plenty of moisture at all times. When the seedlings are about two inches high, each pot containing two plants is deprived of one. As the young plants get larger each one is given more space, in order that the improved light and air conditions may induce more stocky plants. As soon as they have produced their first true leaf they are planted out in the benches already prepared for them.

**PLANTING.**—It has been said that in filling the benches the soil was mounded towards the centre. The reason of this is, that the melon plant under glass is subject to what Old Country gardeners term "corking," in other words stem rot, caused by too damp conditions round the neck of the plant. The mounding obviates this to a marked extent. As a further preventative against this disease Old Country gardeners use what they term collars, which are simply circles of earthenware five or six inches in diameter

and three inches deep. In planting they place the collar on the top of the mound and the plant inside the collar. However, with or without the collar they are planted on the top of the mound two and a half feet apart, watered, and sprayed with the syringe and the house well damped down. If airing is necessary it is given very sparingly, the object of this policy being to prevent the rapid escape of moisture so as to keep the young plants from flagging after being disturbed in planting. A temperature of 70 degrees is maintained at night with an increase of five degrees by day by artificial or by sun heat. The temperature may run up considerably without fear of injury if the house is kept well charged with moisture. The plants are syringed every morning and afternoon if the weather is favourable, with frequent damping of the house throughout the day. In a day or so the plants will have recovered from the check in planting, and begin to stretch, when more air can be given on all favourable days, in order that the plants may make thrifty growth. Watering, syringing, airing, maintaining an even temperature by fire heat, and the training of the plants are the order of things daily from now onwards.

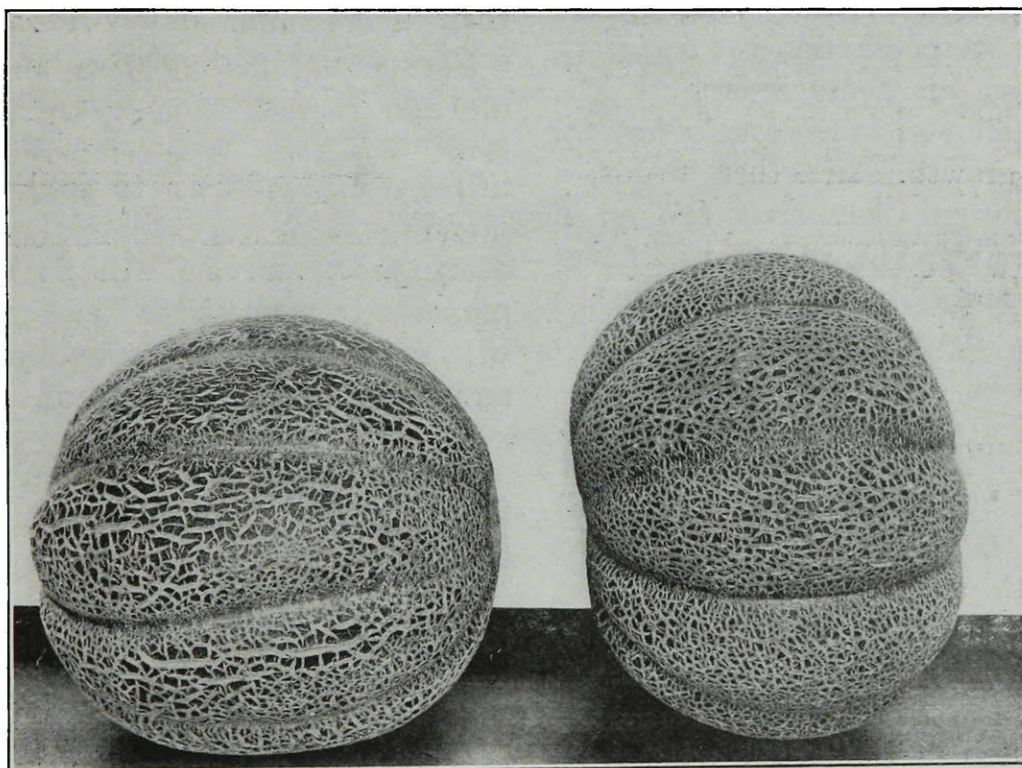
**WATERING.**—Plants growing in a high temperature, such as melons require, need a great deal of water, especially after the plants have covered the space allotted to them and the fruits are swelling. But it is possible to overdo this, especially in the early stages when there are but few roots in the soil. Careless watering at this stage may easily do a deal of harm. The soil in the vicinity of the roots should be kept moist, not wet. When the grower is satisfied that the roots are getting out



into the bench soil, he is careful when watering no longer to wet the soil round the neck of the plant for fear of the "corking" that has already been referred to. When the fruit commences to ripen, drier conditions are given the plants at the roots and as much air supplied as external conditions will permit. These measures will hasten ripening and add flavour to the fruit. No feeding other than that which they derive from the soil is supplied until

**AIRING.**—In early and late forcing the question of supplying fresh air on unfavourable days has to be considered, especially at the setting and ripening seasons. For this purpose the ventilators are opened for a part of the day at least, and the desired temperature maintained by fire heat.

**TRAINING.**—As the plants begin to stretch, the leader or main stem is tied to the first wire, and so on until the plant reaches the top of the house,



THE TWO TYPES OF MUSK MELON, "GORMAN" AND "DECARIE."

after the fruit has set, when frequent waterings with liquid manure are very beneficial.

**SYRINGING.**—The object in syringing is to keep the foliage as clear as possible of insect pests. Red spider and thrips prey on the foliage, and if not kept in check by frequent syringings and continual dampings of the house would soon ruin the plants. Syringing and damping cease as soon as the fruit commences to ripen.

which, in houses built for the purpose, gives a length of growth for the main stem of seven feet or thereabouts. In the meantime, however, the side growth on which the fruit is borne is growing rapidly. It is now that the grower has to display his skill in so manipulating this growth that he can make the plant do just what he wants it to do—that is, produce a crop of fruit. An average crop is four fruits to a plant. The attainment of this

result depends entirely on the way the side growth bearing the pistillate flowers is handled. If the flowers had had an unrestricted growth the matter would be simplified, but as all growth is restricted as nearly as possible to two feet six inches the matter is complicated. The first pair of side growths are in advance of the next pair, and so on until the top of the house is reached. Since this is the case there is only a small chance that female flowers in sufficient quantity can be had, at the same time, in the ordinary stage of development for pollination so necessary for ensuring an average crop, if the plants are allowed to have their natural habit of growth. In other words, a pair of flowers pollinated to-day, a pair to-morrow, and so on, will never give a crop; for the first pair will take the lead, and the chances are that the fruit resulting therefrom will be all that will be got from that particular plant. To guard against this the grower adopts the system of pinching or heading back the lower or more forward side growth to the first leaf. By so doing a new growth is made to start out at the node, and by the time these growths show a pistillate flower the older growths in the upper reaches of the plant will be in the same stage of development, thereby making possible what otherwise could not be done.

The fruits hung suspended from the vines need some form of support; otherwise their own weight would tear them away from the plant. This is especially the case when the fruits are nearing the ripening stage. Little

square nets with a string cord at each corner are usually employed, the cords being tied to the wires and the fruits balanced in the nets.

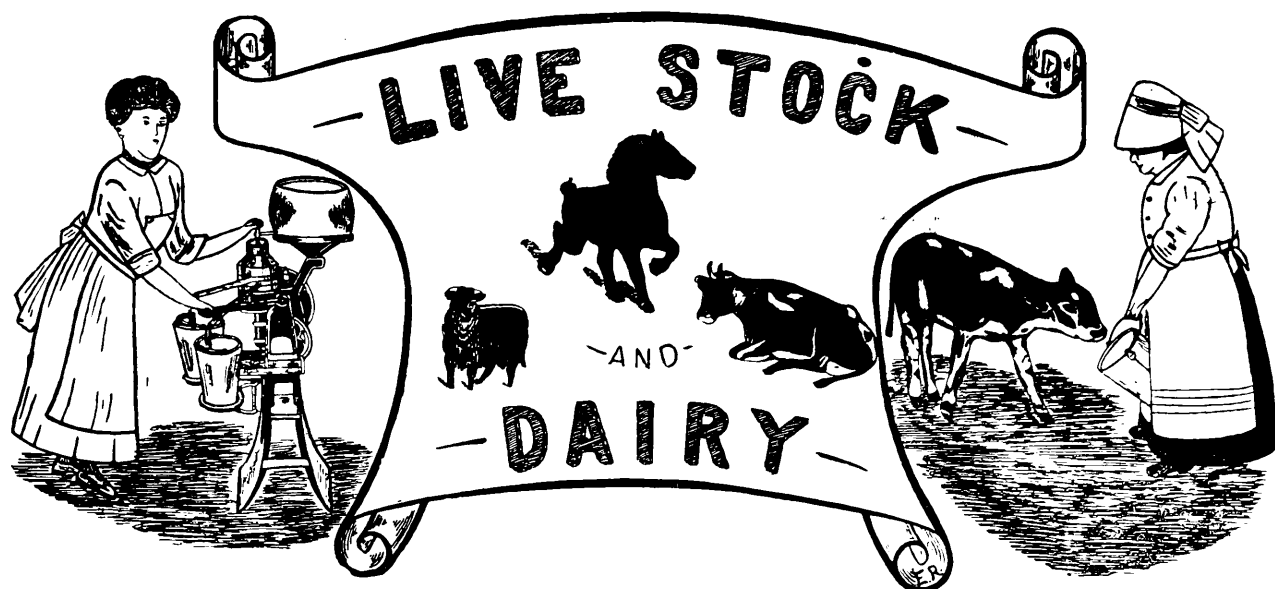
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#### HORTICULTURAL NOTES.

Men of imagination are always progressive. The gardeners who first began the forcing of vegetables in greenhouses for the winter market were of this type. To their foresight is due the present flourishing condition of the industry. Disaster was predicted for these men by their neighbours, and even now, by some, disaster is prophesied if the present rate of increase in area under glass continues. There is, however, an ever increasing population to feed, the demand for fresh vegetables is increasing every year, and he will be the best prepared to meet the demand who plans with a view to give improved service and higher quality in his products.

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For inside forcing of rhubarb dig up the roots after frost sets in, and expose to freezing weather for a week or more until well frozen through. When ready to force, remove to a dark cellar, set on an inch or two of soil, and cover the roots with earth, after which watering to keep the soil moist is all that is necessary. The cooler the cellar the longer time required to force. A temperature of 45 to 50 degrees will give the best results. It may be grown in a temperature ranging from 35 to 80 degrees. Thrifty, strong roots will give the best results. Those plants will do best which are three years old and over. Do not break more roots than you can help when handling.



## The Sheep Industry in Canada.

By O. C. WHITE, B.S.A., Central Experimental Farm, Ottawa.

**T**HOUGH the total output of live stock in Canada is yearly increasing, there is one branch of the industry which for no good reason seems to be on the wane. The flocks of sheep kept on Canadian farms have been growing fewer during the last few years, and it is a matter that calls for the most serious consideration of our stock owners, inasmuch as sheep raising, properly managed, is quite as profitable, and entails no greater amount of work and attention than any other line of live stock husbandry.

In rearing sheep and in preserving good flocks it is true that the farmer has some difficulties to combat which are not met with in the breeding of horses, cattle and swine, and which are not directly under his control, since, relative to the total number of individuals holding franchise, men interested in the upbuilding of the sheep industry are few. Because of the ani-

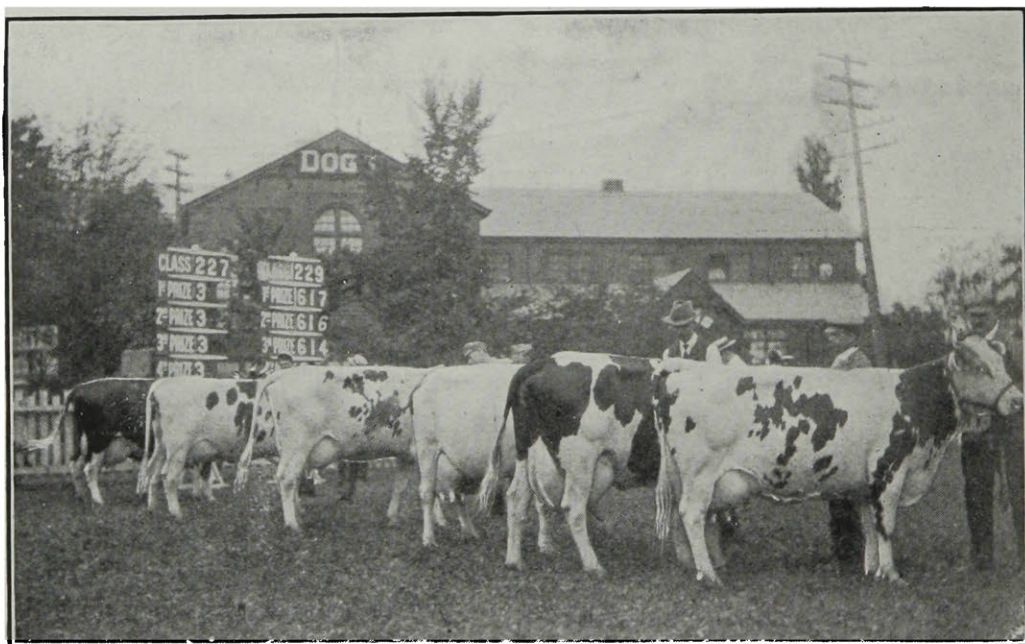
mal enemies of the sheep, the chief of which is the dog, many good flocks have been ruined, and though in certain sections the local councils make some remuneration for losses sustained in this way, there is really no adequate recompense, and it is not to be wondered at that farmers hesitate to engage in a business to which the law affords so little protection. However, potent as this factor may be in tending towards the retrogression of the industry, it cannot be the only cause of the great falling back of recent years.

The farmer himself is open to criticism for his failure to make the most of good opportunities, and good opportunities there are in the production of mutton and wool, despite what has been said that would indicate the contrary. The dog is not a universal nuisance, and in many instances failure, and a consequent abandonment of the sheep industry, has been the result of neglect on the part of the breeder to recognize laws of feeding and manage-



ment that are essential to success in all live stock work, and have to be recognized no less in the case of sheep, than with any other class of animal. Whether sheep are not thought worthy the careful treatment that is accorded the other farm stock, or whether intelligent handling is not considered necessary to success, is difficult to know, yet the fact remains that on farms where a variety of stock is kept, and where sheep compose a part of the whole, in the great majority of cases the latter are given only minor

alone, nor will they grow fat on burned pastures and barren rock. They will produce a fleece every year that will almost pay for their wintering, but top prices cannot be expected for wool that is full of sand and burs. They will increase through lambs, from 150 to 175 per cent., but a large annual crop of lambs need not be looked for from ewes that have been poorly nourished throughout the winter. The practice of dipping is neglected almost altogether, and as sheep are so liable to ticks, lice and scab, it is impossible to



PRIZE WINNING HOLSTEINS AT TORONTO. (By courtesy of "Farm and Dairy.")

consideration, and are still expected to reap for their owners a full share of the total profits. It is but fair to the sheep to demand only that they pay dividends commensurate with the intelligent treatment they receive, and that they will readily respond to such treatment has been proven by breeders and feeders in all parts of the country.

Sheep will live where other animals would die of starvation, and that they are splendid weed eradicators many will testify, but it should be remembered that they will not thrive on weeds

estimate the yearly loss from this so-called minor detail. One need not be a very keen observer to see that negligence is responsible for many failures, the farmer alone being at fault.

Another and perhaps the most outstanding defect in relation to the sheep industry, is the non-castration of the ram lambs. If the farmer realized the loss he incurs, by allowing his male lambs to remain entire, he would surely not long leave himself open to such criticism. It is safe to say that in the fall of the year, conditions being similar,



wether lambs will weigh from 10 per cent. to 15 per cent. more than the rams, and their quality of mutton is far superior. Thousands of dollars are annually forfeited because of this one great neglect, and the remedy costs nothing but a few moments' labour.

The action of the Department of Agriculture in appointing a committee to investigate thoroughly the sheep industry in England, Canada and the United States, with a view to improving conditions, will be hailed with satisfaction by sheep men all over Canada,

Exhibition, the greatest Live Stock Fair on the Continent of America. Here the enthusiastic stockman had the pleasure of seeing before him, in the great massive stables, filled with live stock, the cream of the Dominion.

The Shorthorns were much more numerous than in former years, the total entries numbering 152 head, owned by twenty-one exhibitors. As a breed these animals displayed marvellous uniformity of type, character and breeding throughout. Special mention must be made of the two-year-old bull, Meadow



PRIZE-WINNING AYRSHIRES AT TORONTO. (By courtesy of "Farm and Dairy.")

for it shows that the government is becoming alive to the urgency of the situation, and there is good reason to hope that with the co-operation of the farmers in the matter of reform, a new stimulus will be given to the industry, which will place it upon a much more creditable basis than it has ever before attained.

#### NOTES ON THE CANADIAN NATIONAL EXHIBITION, 1910.

Never before in the history of the Fair has such a strong representation of cattle displaying excellent quality and uniformity of type been seen at Toronto

King, which was awarded the Grand Championship ribbon of the Show, and who, during the week, was sold for the handsome sum of \$5000. He is a very handsome animal, carrying a fine head and neck, and being full of constitution, with a strong, well-fleshed back and well sprung ribs. He is one of the best, if not *the* best, ever seen in the country.

The exhibit of cheese and butter was one of the largest and finest ever seen at the Canadian National Exhibition. The cheeses were of excellent quality, and showed great care in the handling

of the materials. The butter, too, was of a very high standard. Demonstrations were given morning and afternoon to illustrate to the people the ideal method of making butter.

The Ontario Department of Agriculture had on exhibition samples of milk illustrating the effect of contamination by different bacteria. This was of great benefit to many of the visitors, showing very distinctly the necessity of having clean, pure milk, every precaution being taken to prevent dust, bits of hay and straw, flies, hair, etc., or any other bacteria-laden material from entering the milk. A large number of leaflets were distributed to visitors, containing directions for the production of sanitary milk.

There was a considerable falling off in the entries in the Swine Department, this being due, no doubt, to the increased demand for stock for breeding purposes, brought about by the high price of pork products.

One of the most pleasing features of the Swine Judge's work was seen in several instances where hogs which were plainly over age in the class in which they were shown, were passed over by the judges without either honour or notice. This is as it should be. Surely this will serve as a warning. Let us hope that next year may see judges again taking a decided stand against a practice that is most injurious to the breed.

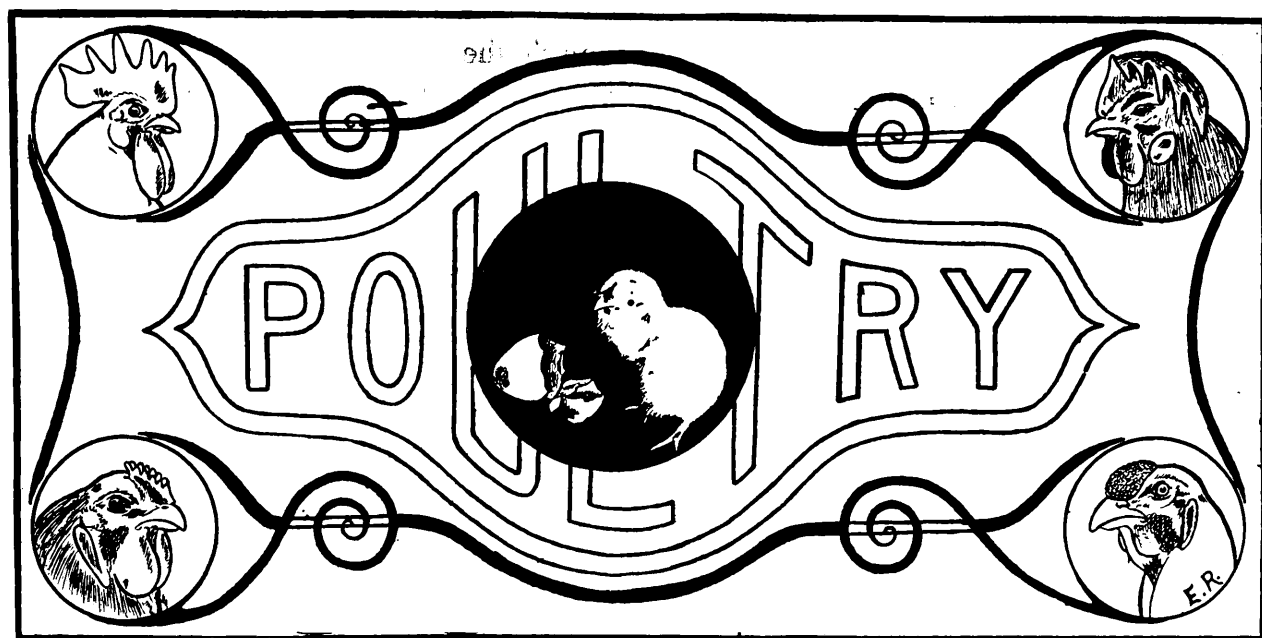
The exhibit of Dairy cattle at Toronto was one of the very best in the history of the Fair. The Holsteins were out

in full strength, numbering some hundred and fifty head. Special mention must be made of the herd of Rettie Bros., it being one of the best, if not the best Holstein herd in Canada. The animals of this herd show a decided change in type from the Holstein of earlier days. They are a large, deep-bodied, low-set, and short-legged type of Dairy cow, thus being a decided improvement over the tall light-barrelled type of earlier days. The Ayrshires, although fewer in numbers, made a very creditable showing, retaining their excellent Dairy qualities. The Jerseys, although not so popular a Dairy breed as those just mentioned, have many admirers, this year's display showing a considerable improvement over previous years, both in numbers and quality, and some very careful work had to be done in placing the awards.

Turning next to the display of horses, we note that although this department was no stronger in point of numbers than in former years, yet the high quality of the aged classes was maintained, and a decided improvement was evident in the younger section, especially in the yearling class.

The sheep pens were all fairly well filled, but it is certain that in several sections there has never been the equal of this year's exhibit, from the standpoint of excellence. It is quite evident that Canadians realize the importance of the golden-hoofed, and know full well how to show them at their best.





## Our Faulty System of Buying Eggs.

### Co-operation the Remedy.

By F. C. ELFORD, Instructor in Poultry Department, Macdonald College.



A GREAT deal has been said about the cost of living; first one thing is blamed, then another, and many reasons have been given why meat and eggs, for instance, are so high in price. Some blame the producer, others the middleman, while the cold storage comes in for considerable censure.

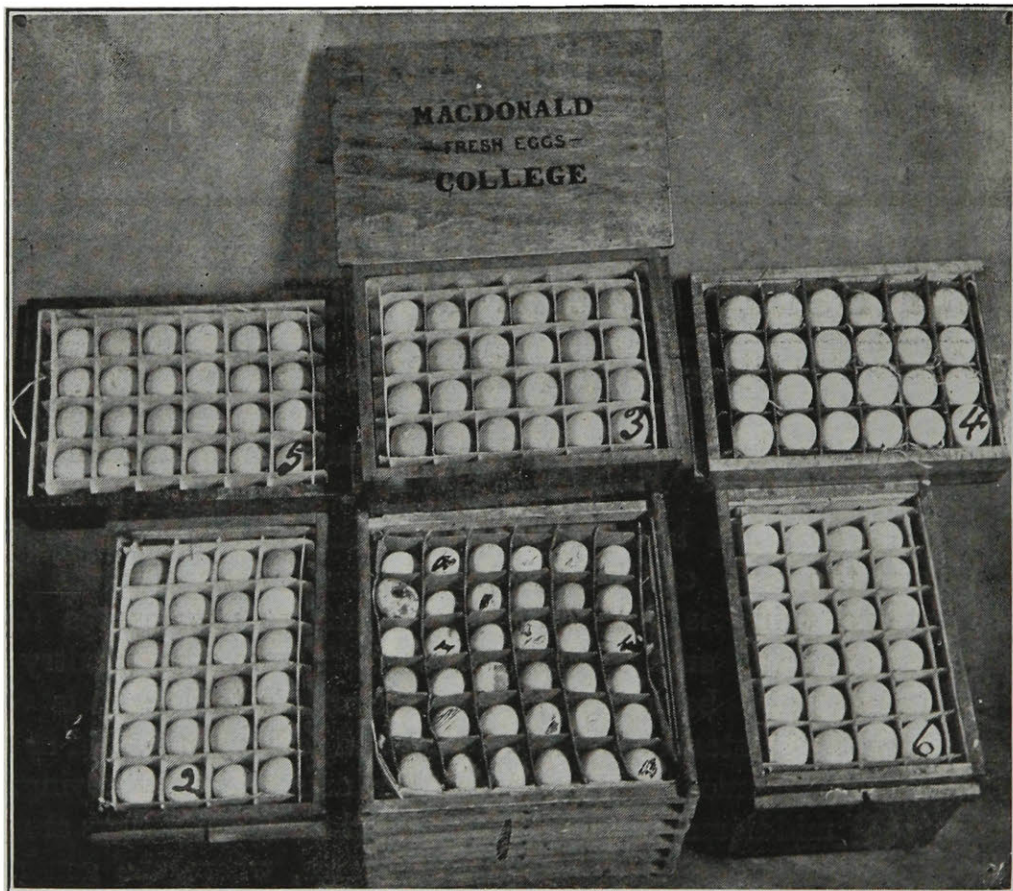
As for eggs and dressed poultry, all of these causes may have something to do with the high prices. The trouble, however, is not in the price so much as in the quality. One does not object to a good price if the paying of it ensures a good article, but when along with the high price the quality is poor, there may be some reason for the boycott of eggs. Why should ordinary eggs be so high; eggs that are not guaranteed, just common eggs? The fault is not all the producer's, nor

is it all the buyer's or the cold storage plant's, but it belongs to the "system."

It is almost needless to follow this "system" from the poultry yard to the consumer's table. It is very often a long and tedious trip, and in the warm weather must be very trying. Probably 90 per cent. of the eggs are produced on the farm, where the general rule is to dispose of them to the weekly egg peddler or take them to the store, where they are traded or sold for goods. In each case there is little or no discrimination. The peddler drives into one farm and gets 20 dozen good clean eggs that have been gathered during the week. The farmer's wife receives say 15 cents per dozen. The next farm is visited; here they are not so careful, and very often the hunting of the week's eggs is left until the day the peddler comes. Upon arrival he finds all kinds of eggs, but they, too, are

bought at 15 cents a dozen. The producers may not care so long as they can sell them, and the peddler does not care, as he is paid by the dozen for collecting—the more eggs the better. I heard of a peddler who was fond of telling his customers that he would take “anything with a shell on, dirt and all, they all had a bath.” Just as long as the buyers will accept these

to bad. On investigation, one woman, though she declared her eggs were fresh, at last admitted that she put in some that might not have been good but she didn't think it made any difference as the eggs were being shipped away. It seems as though people had a different standard of morals when it comes to selling eggs. Here, then, is the first fault in the “system,” the lack of



BOX 1—AVERAGE 12 DOZEN CRATE, FETCHING 20c. PER DOZ.  
BOXES—2, 3, 4, 5, & 6, CONTAIN EGGS CLEAN, GRADED, AND  
NEW LAID, FETCHING ALMOST DOUBLE THAT PRICE.

there are farmers who will sell them. I was at a meeting a few weeks ago when a woman asked “What is to be done with rotten eggs? If I cannot sell them I won't eat them.”

A case of eggs came in the other day supposed to be absolutely new laid. On examination it was found that out of about 300 eggs, there were 90 new laid, 20 rotten and the rest from stale

that fine discrimination on the part of the producer. All people who sell bad eggs are not dishonest. Many are, but they have been trained to it by the “system,” and this training process has been most thoroughly done all along the line.

We know how the country merchant is handicapped. A good customer comes in with ten dozen eggs. Of

course they are all fresh. But the storekeeper knows they are no better than the last lot. He knows that hens do not lay so many more shiny looking, discolored eggs during harvest and threshing time, but he cannot speak for fear of losing trade. He can, however, console himself with the thought that the wholesaler takes them case count, anyway. And so it goes on. With some there seems to be a secret jubilation after having been paid for 20 dozen "fresh" eggs, ten dozen of which were found under the stack.

What has all this to do with the cost of living or the high price of eggs? Let us look a little further. The good eggs from your farm and the bad eggs from mine find themselves in the same boxes, piled up in the same hot room waiting for the weekly trip of the wagon that collects for the wholesale house. My lot of eggs have been laid for from one to seven days, kept possibly not in the best conditions. They may reach the store just after the wagon has left and must wait another week. Store room is not always the best, and by the time they are on the second wagon, the fertile eggs are well on to the broiler stage, the infertile eggs have partaken of the odors of the stale eggs until the best of the eggs are not fit for food. When they arrive at the wholesale storehouse they are from one to three weeks old. There they are candled and sorted into various grades.

A produce man told me the other day that at this time of the year they counted on from 2 to 6 dozen in every case being absolutely bad. The wholesaler, however, has no intention of losing on these eggs, and has set his prices accordingly. The same price is paid for all, but he hopes that there

will be enough good to make his own and a margin. He therefore has to charge the consumer who buys a case of eggs, the first price to the farmer, two or three commissions, cost of transportation, cost of candling, and value of eggs sorted out and sent to the dump. And this extra price has to be charged for eggs that are far from their best. This is the reason why so many, even high priced eggs, are unsatisfactory, and they will remain so until the whole system is changed. There is no reason why the consumer should pay his share of so many commissions or why the eggs he pays for should be so long on the way and be subjected to such conditions.

A bulletin issued by the United States Government is authority for the statement, that when the Iowa farmer is paid 15 cents for his eggs on the farm, the consumer pays 25 cents, or in other words it takes 10 cents to market a 15 cent article. This results in a loss to both ends of the industry, the producer pays his share of these commissions, and the consumer not only pays his share, but has to receive less value for his price. This same authority says there is a loss through carelessness of at least 17 per cent. Our conditions are no better than theirs; so for every dollar the consumer pays for eggs 17 cents of it are actually thrown away. This amount is made up as follows:—Dirties 2 cents; breakages 2 cents; chick development and rotten eggs  $7\frac{1}{2}$  cents; stale eggs 5 cents; bad flavored eggs  $\frac{1}{2}$  cent; total 17 cents.

A system that is responsible for this should not be tolerated. The producer and consumer should come closer together. There is no reason why eggs should be several weeks on the way or why bad eggs should be

sold by the farmer for the same price as good eggs. Why can't the producer market nothing but a new laid egg? Why can't the consumer be willing to pay a little better price for a superior quality?

A co-operative effort is needed to get it there with as little expense as possible. More persons each year are shipping direct to the wholesaler, retailer and consumer; still, the bulk of the stuff comes by way of the "system." Most of those interested see the necessity of a change, honest producers feel the unfairness of being paid the same price for all eggs, dealers and consumers are more willing than ever to discriminate in prices: The time seems ripe for something better. Whatever form this something will take, it will have in it an element of co-operation. Co-operation among the producers, co-operation among the consumers, and co-operation between the two ends. There will be an absence of jealousy between those producing the same stuff for the same market; farmers will realize that the higher the general average and the more uniform the produce the better it will be for each one. Buyers will find that it pays to discriminate in prices, both will know it does not pay even from a business standpoint to misrepresent, and gradually that feeling of suspicion will vanish. The producer will find that the buyer is his best friend, the other partner in the co-operation, and the buyer will appreciate the advantage of handling produce upon which he can rely absolutely.

In order to bring about an improvement in the method of handling the produce of the industrious hen something has first to be done. Education and organization will be necessary.

Much of the present condition is due to ignorance rather than dishonesty on the part of the producer. Though there are not a few deliberate rogues selling eggs there are many honest persons selling bad eggs because they do not know it. They have never learned the difference between a strictly new laid egg and a stale egg. They do not realize that an egg is never as good again as it is the day it is laid, and that every day it is kept, even in the best of conditions, it loses in value. They are not aware that a fertile egg in the nest one day in July is probably not fit for food the next. It never dawns upon them that as soon as the breeding season is over, all male birds should be killed or removed from the flocks. They cannot understand why an egg with a good strong shell cannot keep the contents pure under almost any conditions. When they are told that they should not keep the eggs in an open basket by the kitchen stove or in the pantry along with cooked vegetables, they are surprised. Such persons should be shown what is required in a new laid egg.

For those who wilfully market bad eggs there should be legislation. We require a law to say that "none but a new laid egg can be sold as new laid." This law must also say the same to the dealer. It must not allow him to sell as a new laid egg one that has been in cold storage. It must not permit him to refill "branded" boxes with eggs from another source or of different brand. There are those who require only education—they should have it. Those who must have something more to make them honest—let them have it also.

This will require organized effort all along the line, and especially on the part of the producer. The producer largely

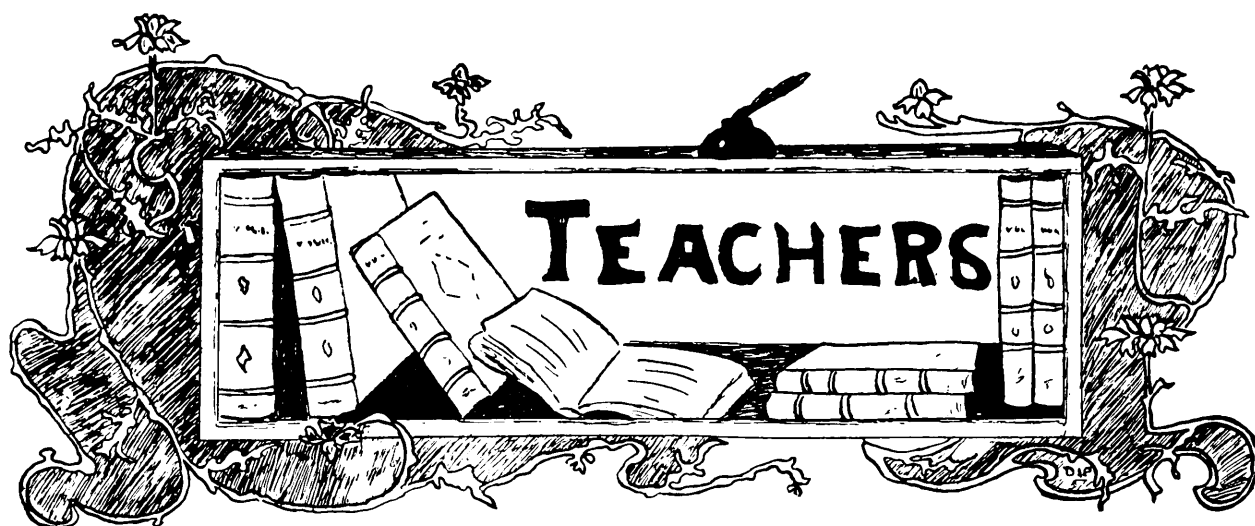


has the remedy in his own hands. If we would produce only a good article it would not be long until we could dictate our own prices. If there were sufficient of the good the poor would have to sell for less and gradually all producers would aim to have the best. To bring this about co-operation somewhat similar to that adopted in Denmark could be worked to advantage. Several co-operative circles, embracing some of the Denmark features, have been tried with such success in Canada that others are encouraged to follow. A circle may cover in extent any territory convenient to a shipping point. The more shipping members it includes the better. The management of a circle is in the hands of the members, and routes may be managed much as are those of a creamery or cheese factory. In some cases these agencies are used as a starting point. The waggon that gathers the milk or cream makes provision for lifting the eggs as well. The aim is to get the eggs gathered from the farms at least once a week in the winter months, and twice a week throughout the summer.

These eggs are taken to the cheese factory or central depot as the case may be, whence they are shipped.

Each contributor is given a stamp with which he marks his eggs. This stamp includes two marks or figures, one indicating the number of the circle, the other the number of the contributor. At the central station where the eggs are received, they are candled and any not qualified as new laid are noted and the mark on the egg indicates the farm from which they came. It is therefore impossible for any member to market eggs that are not up to the mark, and each member is responsible for his own. The output of a circle is sold through the secretary or manager. He may be the man who does the candling and grading, or he may not. It will probably be better if he is, as then he can keep in closer touch with the members of the circle. Each member must conform to certain rules. These rules will cover such matters as cleanliness, the frequent gathering of eggs from the nest, keeping track of them, and marketing none but those laid by the members' own hens, etc. .

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## The Genesis of the Child Study Movement.

By S. B. SINCLAIR, Ph. D., Dean of the School for Teachers, Macdonald College.



FEW years ago in the City of Hamilton, Ontario, a parent related to me the following experience:—

He said: "My boy is five years old, has been to school for three months and is beginning to learn to read. The teacher has taught him the sounds, but he does not know the names of the letters. I thought it was a pity that he did not know his a b c's and decided that I would teach him the right names of the letters. On Sunday afternoon I undertook the task, thinking it would require an hour or less. He learned the first letter quickly, it took longer for the second, and a long time for the third. When we came to the fourth he seemed to have forgotten the others. I thought he wasn't trying and began to whip him, but the more I whipped him the worse he got. Although I whipped him quite hard and stuck to it for two hours he never got to know more than two or three letters at a time.

He didn't take any supper and sobbed pretty nearly all night and was

quite sick on Monday morning. I have concluded that it takes longer to learn the alphabet than I thought it did."

Now this parent was not naturally thoughtless or cruel. He was interested in the progress of his children and desired to help them. In the case cited, his action was due simply to ignorance of child needs and child nature. This experience is characteristic of much of the treatment accorded to children by parents whose intentions are good but whose knowledge is inadequate.

Such ignorance is not confined to parents. Teachers are sometimes the greatest sinners in this respect. I remember hearing a teacher say to a boy whom he had brought out into the entry hall of a school building for punishment: "My boy, there are three reasons why you should be punished, 1st, in order that you may be a better boy; 2nd, in order that justice may be satisfied; and 3rd, in order that the other boys of the school may be deterred from following your bad example. Now, if you promise to be

a better boy without a whipping, the first demand will be met, and I, who am the judge in the matter, will be satisfied, which will meet the second demand. If I whip these walls with the rawhide and you go into the school-room crying, with your hands over your face, the effect on the other boys will be the same as if you had been whipped, and the third demand will be met."

The reader, if he is familiar with human nature, will not be surprised to learn that at the conclusion of this harangue, which was repeated almost daily, the culprit invariably expressed

petrated many times, and further that one of the most intelligent and well-to-do school sections of Western Ontario submitted to this sort of thing for a whole year before changing teachers.

While such examples as those I have cited are fortunately becoming rare, a faithful record of what occurs to-day in many homes and school-rooms would reveal a condition far from satisfactory.

A quarter of a century ago the Child Study Movement was started in the hope that something might be discovered about children which would serve as a guide to those who had them in charge. There is no doubt but that



THE STAFF AND PUPILS OF THE PRACTICE SCHOOL, MACDONALD COLLEGE.

great penitence and his firm conviction that he could be quite as good a boy without a whipping as with it. Further, after the teacher had administered what he deemed to be a proper amount of castigation, to the walls, the said culprit never failed to perform his part with due demonstration, and except for an occasional sly wink to his comrades when passing to his seat, there was nothing to prevent the uninformed onlooker from concluding that the punishment was quite severe.

If to any this story seems incredible, let me say that I saw this travesty on common sense and good discipline per-

thoughtful and observant fathers and mothers from the time of Adam and Eve have studied children after a fashion; but it is only recently that a thorough-going scientific investigation has been made. One of the pioneers in this work was Perez, whose little book "First Three Years of Child Life" is still a classic on the subject.

The method adopted by Perez and followed by a host of others was to observe his own child hour by hour and keep a careful record. Miss Shinn's "Biography of a Baby" is another good example of the Individual Method. This method possesses

the advantage of giving an all-sided historic view of a single personality, and is of special service as a guide to the Teacher and to the individual himself in deciding upon the course to be adopted in the future. An eccentric phase of its application is one in which parents secure photographs of the child every month or two and, by a Kinetoscope adjustment, are thus enabled, in picture form, to represent the growth of the individual from earliest infancy.

Another method of child study is to select a certain stage of child life and by examining a large number of children determine what, as a rule, are the special characteristics of the period studied.

"Adolescence," by Dr. G. Stanley Hall, gives the results of the study of thousands of children during the adolescent period, with deductions regarding the bearing of these results upon education. Obviously such informa-

tion should be of great value in selecting and arranging courses of study and in determining methods of teaching, as well as conditions of study, to be adopted in different grades of school.

The topical method takes some definite topic, e. g. the imagination of children, and investigates the characteristics of the imaginations of different children of the same age, and of the same child at different stages of development. "Imitation and Allied Activities," by Miss Haskell, and "A Study of Children's Interests," by Earl Barnes, are well known products of this Method.

The study of children has become so extended and comprehensive that a recent bibliography of the subject contains over two hundred pages.

In a future article I hope to point out some of the discoveries made and their influence upon Education.

## A Tour in the British Isles.

### A Canadian Teacher's Impressions of British Schools.

By MISS J. T. GREIG, Teacher in Practice School, Macdonald College.



WAS ten days going from Montreal to Liverpool. The journey across may be summarised thus:- Montreal wharf—Saturday, August 29th.—C. P. R. Steamer "Lake Champlain"—three days of rather rough weather in mid-ocean, those three days sea-sick—after three days more the landing stage in Liverpool.

I was soon settled in a hotel, and after locating the Board of Education Building, and noting that all "trams" started from Pier Head, and putting

into practice:—4 farthings make one penny, 12 pence make one shilling, 20 shillings make one pound, I began to think about schools.

The chief features of the Liverpool schools as they impressed me were:—the clear enunciation of the pupils, the attention given to drill on the vowel sounds, the soft sweet singing, the fine work done in colour and drawing, the swimming bath in each school, with one lesson a week on the art of swimming, besides optional practice, the teaching of laundry, needlework,

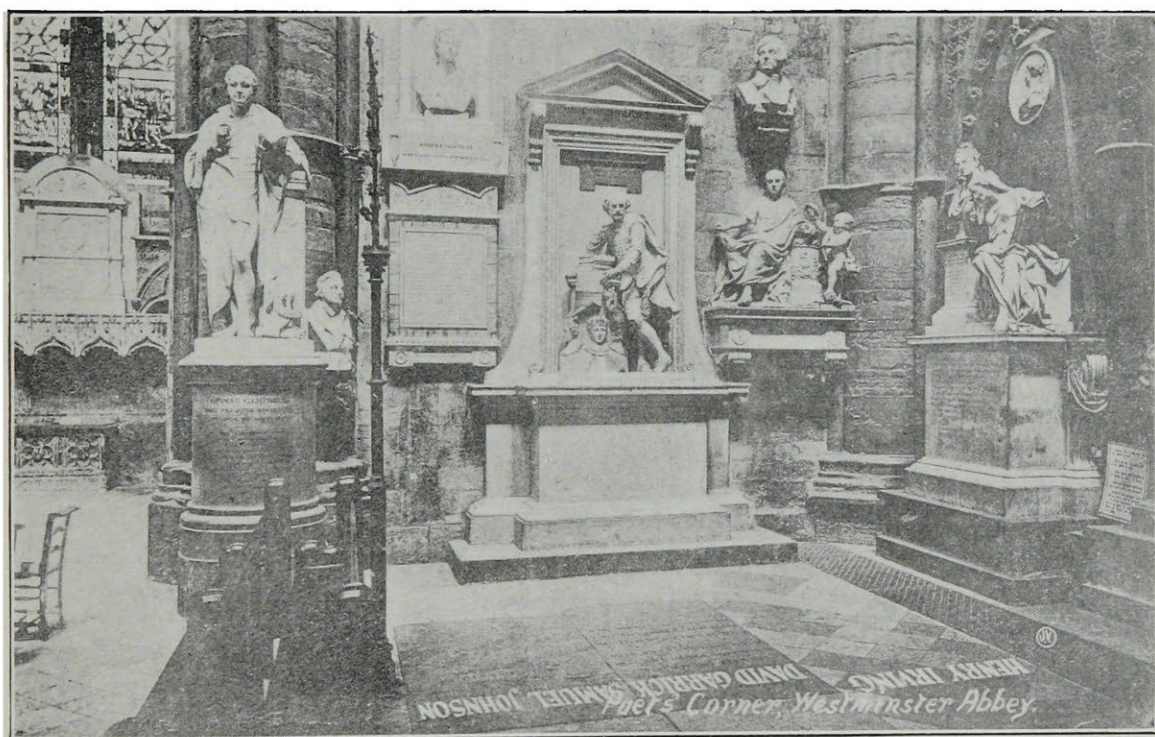


and in some schools a half-hour lecture per week on "the care of babies", the opportunity given to classes—as in almost every city—to visit the Art Gallery, the Museum and places of educational interest.

The usual elementary school in England has three departments under one roof, sometimes three stories high. There is the Infant Department, Junior and Senior Girls, and Junior and Senior Boys. One advantage of this arrangement is, that the women teach-

tain amount of freedom in framing his curricula. One Principal made much of Nature Study, and had a very good collection of specimens in cases in the halls. Manchester, in a manufacturing district, is far removed from country scenes, so that, in order to obtain plants, flowers, etc., a box was sent up weekly from North Wales.

I shall make mention of many of the social functions which were held in our honour, for two reasons:—to show you that the English people are not so very



ONE OF THE PLACES VISITED DURING THE CANADIAN TEACHERS' TOUR  
IN THE OLD COUNTRY.

ers have a goal to reach, viz:—the position of head-mistress. In Scotland they have the mixed schools as we know them.

The system of examinations has been almost altogether done away with; in their place they have School Inspectors. I have not space to discuss from what I know of examinations here, and from what I heard of School Inspectors there, which is the greater evil, but with the approval of the Inspectors, the head-master in England has a cer-

reserved, as we often hear it remarked about them, but most hospitable and friendly; and because these entertainments were the means of bringing us together, of exchanging thoughts and ideas on our Profession, and in many ways cementing bonds of union between the Old land and the New, which formal visits to the Schoolroom could never have done.

From Liverpool we went to Wales. Never before, but often since, have I

wished that I had some Welsh ancestry, for kinder-hearted, more hospitable, enthusiastic, jolly people I have never met. The citizens of Barry, for example, on our arrival carried us off by twos to our homes, made us one of them, and held a combined educational meeting and reception that evening. Next morning, after seeing most enthusiastic teaching, thorough work, bright, neat children, we were mounted in brakes and in an afternoon's drive saw some of the beautiful scenery for which Wales is noted.

On account of having no examinations (I think I am right in saying), no Inspectors, no bugbears of any sort, Barry is called "the teacher's Paradise," yet we were all deeply impressed with the fine teachers, pupils, and results.

At Bristol, the children's soft, musical voices delighted our ears, in reading, recitation, and song, while I never saw better execution of physical drill. A fine position was maintained throughout every exercise, and such precision, energy, and grace of movement was beautiful to behold. They begin at an early age with simple free exercises, gradually increasing in difficulty to combined movements and advanced series, so that by the end of the school course, every muscle of the body is under complete control.

On a Saturday evening we found ourselves in the Metropolis of the world. Of course, I attended Sunday morning service at St. Paul's Cathedral and the service in Westminster Abbey at three o'clock.

In the London schools, the public baths are made use of, and each season about 100,000 children are instructed in swimming. Dancing steps and the lancers form part of their physical ex-

ercises. There is a revival of the Morris dances, the dances of Shakespeare's time, and of folk songs. I saw an exhibition of both in a school for girls in Greenwich.

A headmaster in Greenwich was an inspiration to me; he has made a study of the requirements of the people, and is training the children in what they will require in after life. For instance, mechanics are in demand there, so the senior class was making a drawing from the object of part of a machine, which the following year, no doubt, many of them would handle. He correlated all the subjects as far as possible, and always began with Greenwich.

We went to Norwich next. One thing I saw in Norwich that I wish we had in Montreal, that is School Gardens. The boys had vegetable gardens, the girls flower beds. Each had to care for his own utensils. That close acquaintance with spade and hoe develops moral character, to my mind, more than many a twenty minute talk on morals in the class room.

I could not help wishing that I had spent all the previous years of my life in reading, so that I could have more fully appreciated all that I saw. It was a distinct pleasure to wander around Stratford-on-Avon, with all its Shakespearian associations; to see Warwick Castle, and think with Ruskin that it was probably much happier to live in a small house and have Warwick Castle to be astonished at, than to live in Warwick Castle and have nothing to be astonished at.

To visit the "ancient and learned city of Oxford," to be told to reflect on the noble ideas of education the people of 600 years ago had there, and to be told that if we could but breathe the

spirit of Oxford, our visit there would not be in vain. We were not told exactly what that was, but surely after having seen Oxford, one is never quite the same again.

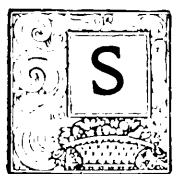
To see Stoke-Pogis Church, "yon ivy-mantled tower" of Gray's "Elegy in a Country Churchyard,"—Windsor Castle and its State Apartments where kings and queens were and are entertained, to see Cambridge, Ely Cathedral, York Minster and the walls of York, then to land in the most picturesque city of our travels,—Edinburgh. The educational institutions here are of a very high order; the teachers seem to have such thorough education and teach so well, especially the use of English. I believe that Edinburgh's boast is:—"Our leading industry is education." The citizens of Edinburgh are proud of their city. It gets a great deal of east wind, so someone has described it thus:—"Edinburgh is a very east-windy west-endy place." I have not time to tell you of the beauty of Scott's country, but I returned from

Melrose fired with the purpose of re-reading all the Waverley novels. Ayr, with Robbie Burns' memories filled me with a similar longing, yet I was not sorry to end our trip with Dublin and Belfast.

There is a wide-spread enthusiasm and interest in Canada and its people. The people of the Old Land seem to know more about us; as far as I could discover, two events have created that growing regard for us, the Boer War with its Canadian heroes, and the recent visit of the British teachers to Canada. Perhaps I might add a third, the splendid Canadian exhibits in Canada's Pavilion at the Franco-British Exhibition in London. We are told of a place in Italy whose waters are said to possess the power of making anyone return who drinks thereof. I can safely say that all the waters of all the places we visited in the Old Country have had that effect on me. So that if ever the opportunity offers itself, I should like to revisit those now familiar spots.

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## A Year in a Village School.



OMEWHERE, gentle reader, I suppose you have read that the hopes, dreams, plans and ambitions of our childhood often come true. Well, mine certainly did—for my one ambition was to be a country school teacher. To have a little red-brick school house all of my very own, surrounded by a tiny garden and a shady play-ground for the children was the height of my dreams. But a few days teaches the city girl that her task is not so easy as she imagined.

Now let me describe my school house and my first day there. The first part of my dream did come true, for my school house was actually red-brick with some beautiful old trees round it, which I suppose had looked down for many a generation upon the children playing beneath their shady branches. There was no garden, but then one cannot have everything.

The first morning, on my way to school, I encountered one of the trustees, who gravely informed me that some of my boys were rather large and that he sincerely hoped I would have no



trouble. My heart sank, and as I turned away, Will Carlton's lines came to me and I softly said: "Them's my sentiments tew." But I managed to mount the stairs, and as I opened the class-room door—Oh! that corner. If I were only clever enough to describe it! For there stood four or five great big boys, giggling, talking, and having a splendid time—just such a time as only boys of that age can have. All the time thousands of things were running through my brain; for instance, concerning "Bagley's" chapters on "The First Day at School, etc." But of no avail! I could think, see or imagine nothing except that corner. I rang the bell and opened school (trembling from head to foot). What if they all should decide to have a real jolly good time—there was no principal to send them to, for I was head teacher. And to think of strapping was useless, because the majority were much stronger and taller than I was; and in my estimation a strapping is not a particle of good unless it hurts! So what did I do but sit on one of the front desks and tell the boys that, as this was my first year of teaching and the first time I had ever been in a village school, there were many things I needed to learn and I hoped that they would help me all they could; and that by all working together I was sure we would have a successful year. What would Bagley have said to such a speech? So we discussed plans for a nature study shelf, the election of our class president, and the school colours. I then laid down a few laws that were never to be broken. And so passed my first day in the village school.

Before I go further I must tell you how we opened school each day. After prayers we saluted the flag which

was draped on one of the side walls. As this was altogether a new thing for the pupils it was some time before it was done gracefully. I can see them now, standing erect and saying in their loud boyish voices "I give my head and my heart to God and my Country—one king—one Empire—and one flag."

We did not have much singing, as most of the boys' voices were just breaking, so I had each boy prepare a reading in turn. He would come up to the platform and read it clearly and distinctly to us all; though at first they were a little shy and awkward. I used to hear of the latest discoveries concerning the aeroplane, torpedo boat and such things that will ever be dear to the boyish heart.

Now about our Nature study shelf. Among my boys there were two or three that were very clever with tools. And what was my surprise one morning to find that they had put up a shelf and varnished it too—all ready for our collection. In a few days we had about twenty jars containing caterpillars, a glass box containing different specimens of the cotton plant, and many other interesting things.

Underneath the Nature study shelf there was a table on which I kept some of the latest magazines which would be interesting to the pupils.

Sometimes during a rainy recess I allowed the boys to play ball (soft rubber) in the room, as there was no basement to play in. Many a time while I have been correcting home work books I have actually sat and trembled, for I was never quite sure where the ball was going to land! But finally one day it just escaped my head and it happened to be more than rubber too. So, much to the boys' disap-

pointment, no more ball was allowed in the room.

When thinking of my school room, there are always two things that stand out clearly before me. Firstly, that as the ceiling was very high, there were three or four long iron rods placed about half way up the walls to act as a support. Many a noon hour I have come back early and caught some of my boys performing the most wonderful feats upon them. So daring were they that often I feared for their safety. Secondly, one of the walls was so badly marked that I bought some dark green paper and covered it about half way up and upon this I mounted some specimen work. But woe to it all! For one day when I was hearing Model II's History Lesson up on the bench, a boy in the front seat quietly tied an ink bottle around the tallest boy's neck, and when he arose—lo and behold—the cork flew out! Some of the ink splattered over the green paper and some went calmly down his neck. I do not think it wise to tell you here how I punished my young culprit.

Every season brought its joys to the boys. Especially the snow-balling period when everybody was snow-balled and I was pestered early and late with

complaints. O! the number of times I have told my boys how wrong it was—but down in the bottom of my heart I knew “boys would be boys.”

So the year went on, bringing its joys and its trials. Many a night after five, when my physics class had gone, and I had swept and dusted so as to have everything ready for the next day, as I locked my school house door, I wondered if it were all worth while. And then I would feel thoroughly ashamed of myself for suddenly the Assembly Hall of Macdonald College would come before me with dear Dr. Robertson standing before the students repeating these lines that can never grow old:

“To live is well,  
To love to live is better,  
But to love to live to labour is best  
of all.”

So when people tell me that I wasted a year in the country—I simply say that I learnt more in that one year than I could have learnt in five in the city. And when I bade my boys and my little school good-bye the only thing I regretted was that I had gained so much and had given so little.

G. E. HATTON.

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## A Trip to Hudson Heights.



AN announcement made by Dean Sinclair that there was to be a picnic at Hudson Heights on September 10 was heard with great pleasure, especially as Drs. Sinclair and Brittain were to accompany it.

The morning of the 10th dawned fine and clear, and at the appointed hour our party assembled on the steps of the Main Building. Then we all walked down to the boat. Luckily for our convenience there were not many passengers on board; however, the few there were shewed considerable interest in us all.

At last the boat reached Hudson, where we all got off and started for the picnic ground. Our destination was a grove owned by Mr. Macaulay, who lived at the Heights and had most kindly offered his place for the occasion.

Mr. Macaulay himself met the boat and had at the wharf a haycart drawn by a beautiful team of horses to accommodate those who did not care to finish the journey on foot. Our host certainly selected an ideal situation for his summer home. A high cliff overlooks a narrow plain below and beyond this plain lies the Lake of Two Mountains. The cliff is formed almost en-

tirely of sand, so one can judge that it must at one time have been on the Lake shore, having been worn back in the course of time to its present position. The grove on the cliff abounds in beautiful trees, most of which are oaks.

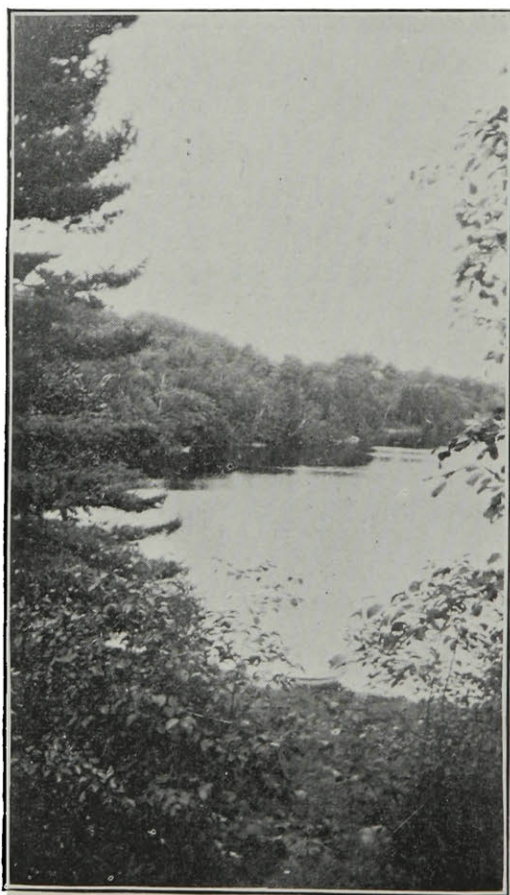
We were escorted to a huge sand pit by which a stream flowed. This stream was put to a very useful purpose. The

sand from the pit was carried down by the labourers and was then washed and carried away by the stream. A long pipe which reached almost to the railway track was used for this purpose. The sand is then loaded on to cars and carried to the city.

After examining this interesting process we returned to the grove where luncheon was served. This interesting item of the day's programme was followed by short speeches from Dr. Sinclair, Dr. Brittain, Pro-

fessor Evans of McGill, and others of our party. It was then time to return to Hudson to catch the boat, so after thanking our host for his hospitality we set out for home—that is, of course, the College, every member of the party having spent a most enjoyable day.

M. P. B.



KINGSMERE LAKE, QUE.

## The Nature Study Scholarship Course, 1910.



It was the kind wish of our former Principal, Dr. Robertson, to make the students in the School for Teachers at Macdonald College better acquainted with Mother Nature. In order to do this he offered a number of scholarships of ten dollars each to cover cost of books and apparatus; he also enabled the students who were successful in gaining the scholarships to remain in Residence at his expense for the two weeks of the course after the close of the College term, and so enjoy more fully the study of Plant and Insect life with the aid of their esteemed and enthusiastic Professor, Dr. Brittain.

The number of scholarships given last June was twenty-five, and the students who obtained these were joined by twelve students of the 1908-09 Nature Study Class who came to complete their course.

The work began on the morning of June 17th. The time of each day was divided into two periods, those of the morning and of the afternoon. The morning periods were devoted to out-of-door work which consisted of gathering specimens of plants and insects,

studying the native birds and trees and listening to interesting lectures delivered by many of the College professors. The afternoon periods were devoted to determining specimens which had been gathered in the morning, and in making representations of these in pencil, ink and water-colour to serve as a future aid in the teaching of Nature Study.

On several occasions most enjoyable walks were taken in the evenings. These afforded an opportunity of further studying birds, trees, and stars.

The reader might imagine that this course was a case of "all work and no play" but not so, for the social life was not in the least neglected. Dr. and Miss Sinclair, Mme. Cornu and Miss Robins kindly entertained and endeavoured to make one and all have a jolly time.

But all good things come to an end, and when, on the 28th of June, we parted for our respective homes we could not help but feel grateful to Dr. Robertson for affording us such an opportunity for studying Nature under our enthusiastic instructor—Dr. Brittain.

D. H.

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## Canadian Winter Song.

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In days of old, when earth was young,  
And all its glories yet unsung,  
A land arose from out the sea,  
With mountain, plateau, vale and lea;  
They called it "CANADA."

It stretched from 'neath the polar star  
To where great inland oceans are;  
From proud Atlantic's throbbing breast  
To that great water of the West,  
The fathomless Pacific.

When o'er this fair and fruitful land  
There hovered an angelic band  
Arrayed in rainbow colours blent,  
On loving errand fondly sent,  
They would a gift bestow;

And so in glad, unmixed delight  
They brought a robe of spotless white,  
And dropped it down with softest hand  
O'er lake and stream, from strand to strand,  
And smiled a fond adieu.

When strangers came from other shore,  
And viewed its glories o'er and o'er,  
They cried, "The gods sure here do dwell,  
And o'er the land have cast a spell  
Of beauty and of grace."

And since that day, at North-wind's call,  
The feathery snow-flakes gently fall,  
Clothing with beauty hill and plain  
And bringing joy to hearts again,  
That sore and sad have been,

For far and wide with dazzling ray  
The icy diamonds glint and play  
As Sol opes wide the gates of morn,  
And ushers in the day new-born  
From out the realms of night;



And when the day has swiftly sped,  
And Sol sinks down in ocean bed,  
The moon with pale but sun-lit face  
O'er the white landscape seeks to place  
    A shadowy tracery.

O ye who hail from other climes,  
Who ne'er have heard the sleigh-bells' chimes,  
Who ne'er have felt the life-blood flow  
In rapid course, as through the snow  
    Ye fought and struggled,

Come, taste the joys the ice-king brings  
As in the frosty air he sings  
Of Winter's mad but pure delights,  
Of cloudless days and star-lit nights  
    In our fair Canada.

A. W. K.



TEACHERS WORKING IN THE SCHOOL GARDENS, MACDONALD COLLEGE.



## Extension Work in Household Science.

By MISS K. E. FISHER, Dean of the School of Household Science, Macdonald College.



IN considering the relation of the department of Household Science in any College to the community, the question of Extension Teaching is a most important one. To quote from a recent address by the President of a leading American University:—"A College to be of any great value must grow out of the community in which it lives, and must be in absolute touch with the community, doing what that community needs."

Although in Canada considerable instruction in Domestic Science is being given to women, it is largely confined to educational Institutions in towns and cities. Almost nothing is being done in this direction in the rural schools nor is much if any Extension work carried on along these lines by Canadian colleges. In the United States, Extension Teaching in Home Economics has grown rapidly during the last few years. The New York State College of Agriculture at Cornell

University was probably the first to do definite work in this way, when it organized under the direction of Miss Van Rensselaer a Reading Course for Farmers' Wives. Later it has organized rural clubs for the study of domestic and cultural subjects, a short course of three months at the College, and also a Home-Maker's Conference with women from the different parts of the States as officers, which meets at the College during Farmers' Week. The membership of the Reading Course is now very large. Bulletins are frequently issued, accompanied by questions to be answered and returned by the members to the College. The University of Illinois has worked out very successful extension plans, and last year sent out several members of the staff throughout the States lecturing and demonstrating. Five years ago the University also organized a School for Housekeepers which meets annually, and continues two weeks. Last year it had a registration of over 100, and

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thirty-one counties were represented. An experimental house at the College was a source of much interest, and demonstrated to the students and visitors the principles of house decoration and equipment. Lectures were given in nutrition, household management, household furnishings, and other problems of home making. Many other State Universities have done equally excellent work in Extension teaching.

In Ontario the Department of Agriculture has taken up this work in con-

in her work, and to provide a study of home conditions that are attractive. It is only necessary to visit the districts in which the Women's Institutes flourish to find what a favourable influence they have had on the homes there and the women in them. Although this work is carried on in connection with the Farmers' Institute, there is a very close connection between Macdonald Institute at the Ontario College of Agriculture, and the Institute work for the Province. The women hold



EASTER DISPLAY IN GREENHOUSE, MACDONALD COLLEGE.

nection with Farmers' Institutes. Probably there exists no better agency for establishing this work than in this way. The object of the Women's Institute in Ontario is to do for the woman in the home, what the Institute is endeavouring to do for the man on the farm. It is trying to reach every country home with a School of Domestic and Sanitary Science and Household Art, to encourage the woman at home to take new and more intelligent interest

their Annual Convention at Guelph, and there has been established something in the nature of a circulating library or bureau of information, whereby Institutes in search of help for the study of different subjects may receive definite information through correspondence with the College. I cannot speak too highly of the work which Miss Watson, Director of Home Economics at Macdonald Institute, has done in this direction. The University is also

planning Extension work for women this coming year in connection with their department of Agriculture.

It would seem then that, here at Macdonald College, in trying to get the people of the rural districts interested in, and in touch with the School of Household Science, we are as yet only considering one phase of the question. We have organized a Home-maker's Course, and a Short Course of three months, but would it not be possible to extend much of the College teaching right into the centre of the different communities, through the organization there of clubs for study? Could we not in this way carry on work at Quebec similar to what the Institutes are doing in Ontario? I have had the privilege of visiting many of these Institutes, and have realized how much they mean to these women, how much they have brightened their lives, and what social centres they have proved for women whose lives are otherwise very often hopelessly isolated. I have met at some of these gatherings women who have driven long distances to attend, and it is wonderful how much latent talent has been developed by the members who have taken part in the programmes and in the subjects studied.

In carrying on this work, of course, the chief problem is to train leaders.

There must be some one in each community thoroughly in sympathy with the work, with sufficient enthusiasm, and capable of carrying it on and interesting other women of the community. If the College sent out any persons to start this work, one of their chief duties would be to discover these leaders, and, after organizing, leave the work in their charge, coming to their aid frequently by delivering lectures, and in directing them to sources of information. Some such method for conducting the work would be necessary to secure its permanency and development.

May I mention here that the students in the School for Teachers going out from Macdonald College to teach in the rural schools might prove themselves important factors in developing these associations. Although they are given a very limited course in Household Science, and could not be expected to carry on the teaching of the subject very extensively, they could at least give some simple lessons, and even with a one burner oil stove at their command, they might discuss the subject of school lunches with their pupils, and demonstrate simple and nutritious dishes. As part of the work in Hygiene, it would be one of the most needed things that might be introduced into a rural school.

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## Gravity Water Supply.

By C. J. LYNDE, Ph. D., Professor of Physics, Macdonald College.



THE simplest method of securing water supply is to let the water run down-hill from the source of supply to the house and stables.

There are four ways in which such a gravity supply may be secured, namely; from a spring on high ground, from a well on a hill side, from an elevated tank filled from the roof or from a spring or brook by means of a hydraulic ram.

*Spring.*—A spring on high ground within convenient distance of the buildings is an ideal source of water supply. To protect the water from contamination and to bring it to the buildings, the arrangement is as follows. The spring is walled up with a casing of brick or stone set in cement and fitted with a tight cover; the overflow pipe is protected with wire gauze to keep out vermin; the service pipe, a one and one quarter inch galvanized iron pipe fitted with a strainer at the upper end, is laid underground to the buildings, two feet underground if the water runs continuously and four feet if it runs intermittently.

*Well on Hill Side.*—In the hilly parts of the province, a gravity supply is secured in many cases by sinking a well on a hill side above the level of the buildings. The ground water from the higher land fills the well to the ground water level and is piped to the buildings as described above. If a person purposes to make such a well, it should be sunk at the end of the dry season and a pumping test made to determine the quantity of water given. If sufficient water is found at this time,

the chances are there will be an ample supply at all times.

*Elevated Tank.*—Another form of gravity supply is secured by placing a tank in the house or stables in an elevated position but sufficiently low to be filled by rain water from the roof, for example, by placing a tank on the second floor of the house. A difficulty in this method is that the ordinary house floor is not strong enough to support a large tank, and a large tank is required to hold enough water to supply the house from one rain shower to the next. It is the practice in this case to place a medium sized tank on the second floor and a larger overflow tank in the cellar; a force pump is then used to lift water into the elevated tank when its supply fails.

*The Hydraulic Ram.*—If there is a spring or brook on a lower level than the building, a hydraulic ram may be used to pump water into an elevated tank in or near the house or stables. For this purpose the water must have a fall of at least eighteen inches and a flow of at least two gallons per minute.

Fig. 1. Hydraulic ram pumping water from spring into an elevated tank from which it flows to the house and stables by gravity. (Courtesy of Canadian Farm.)

In Fig. 1 a general view of the arrangement of the hydraulic ram is given. The water flows from the spring to the ram through the drive pipe, the ram forces part of it to the tank, and from there it flows to the house and stables by gravity. When a ram is used in a climate like that of Canada, the pit in which the ram is placed is

covered over in winter; the tank is placed in the attic of the house or in the hay loft of the stable; and the drive pipe and discharge pipe are placed underground. With this arrangement the ram will work all winter without freezing.

*How the Hydraulic Ram Works.*—In general it may be said that the ram uses the energy of running water to lift a fraction of it to a higher level. The fraction lifted depends upon the

gallons of water falling three feet would lift one gallon fifteen feet.

Fig. 2. Sectional view of the Gould standard ram. (Courtesy of Canadian Farm.)

The working of the ram is illustrated in Fig. 2. The water enters the ram through the drive pipe G, passes through B, and out through the working valve A. The rate of flow rapidly increases and when it reaches a certain velocity the force of the water closes the work-

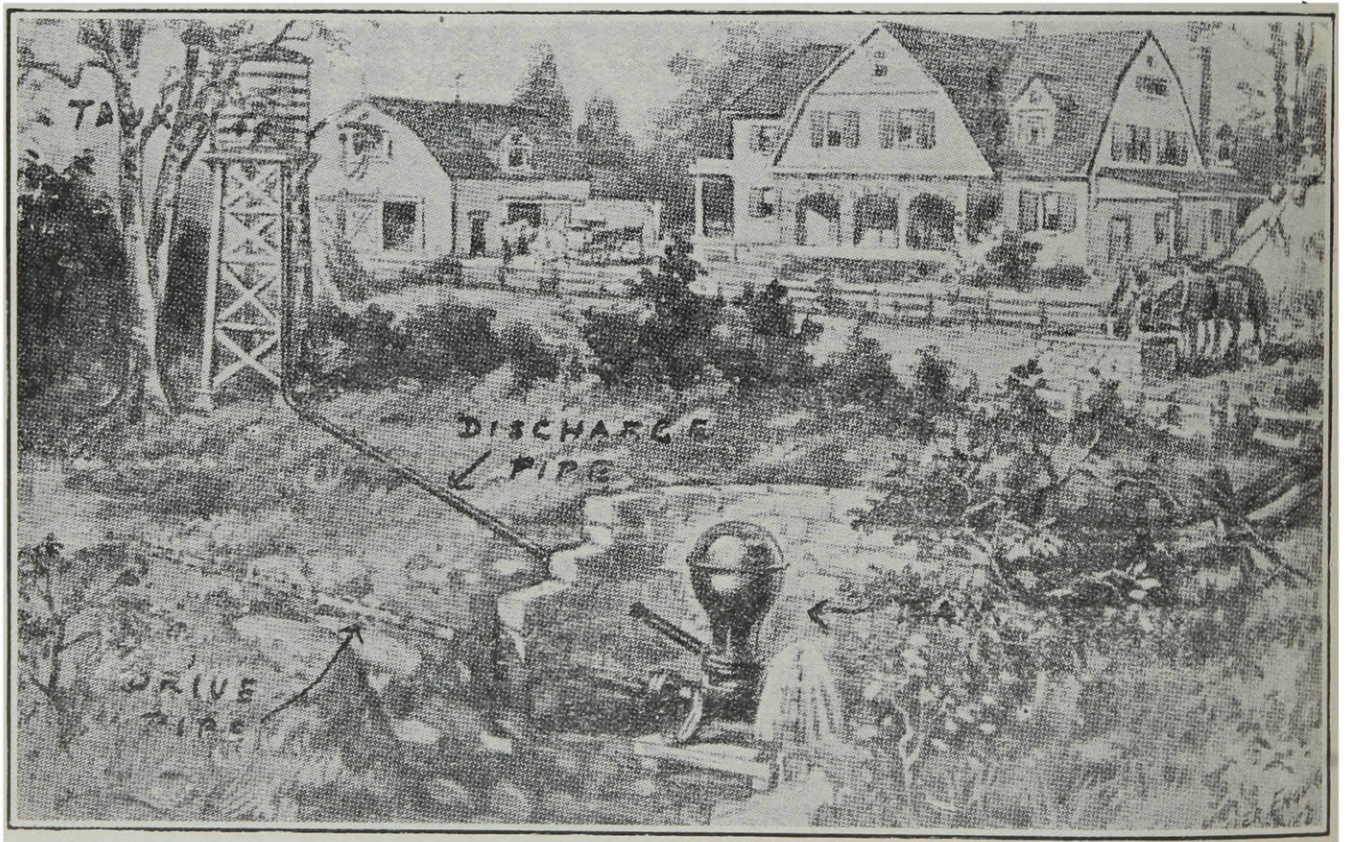


FIG. 1—GENERAL VIEW OF HYDRAULIC RAM.

relation between the fall and the height the water is raised. If there were no friction in the pipes and valves, the fraction lifted would be the fall divided by the height; for example, if the water from the spring has a fall of three feet and the water is raised fifteen feet, the fraction raised would be three fifteenths or one fifth. There is friction, however, and the fraction of water lifted is smaller; in the case stated above, it is about one seventh, that is, seven

ing valve A; the momentum of the water in the drive pipe then forces part of the water into the air chamber F through the working valve E. The air in the chamber, being thus compressed to a smaller volume, exerts a back pressure on the water, which brings it to rest and starts it moving back up the drive pipe. This backward movement of the water allows the valve E to close and the valve A to open; the water again flows down



the drive pipe and out through the valve A; the valve A again closes and more water is forced into the air chamber through the valve E, etc. This operation is repeated from 20 to 200 times a minute according to the relation between the fall and the height the water is raised. The compressed air in the air chamber keeps up a continuous flow of water in the discharge pipe H, which leads to the elevated tank. The entrance to this discharge pipe is seen just behind the valve E.

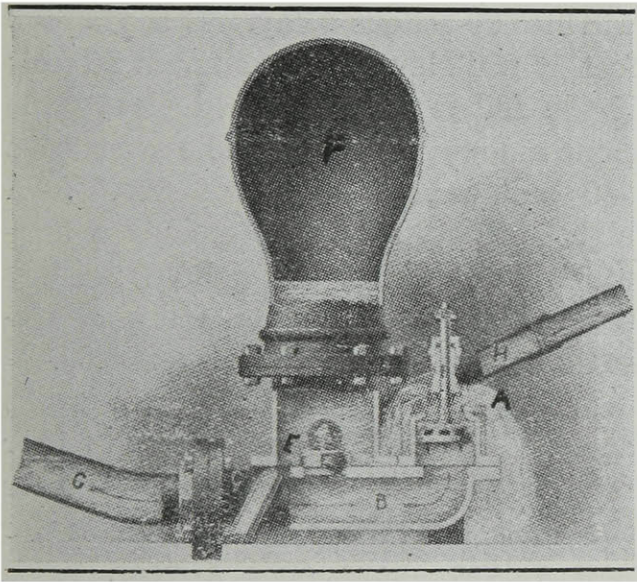


FIG. 2—GOULD'S STANDARD RAM.

The air in the air chamber is gradually absorbed by water, and in a short time all the air would be absorbed and the ram would stop, if a fresh supply were not admitted. The air is admitted automatically through a small sniffing valve C located just to the right of the flange of the drive pipe. This valve is simply a small hole which admits air as follows: when the compressed air in the air chamber starts the water moving back up the drive pipe, there is, for an instant, a partial vacuum created in the chamber B; this partial vacuum allows the pressure of the atmosphere to force a little air in through the sniffing valve; and

this air is carried into the air chamber on the next ramming motion of the water from the drive pipe. Only a few small bubbles pass in each time, but this is sufficient to keep up the supply of air in the chamber.

Fig. 3. Sectional view of Niagara double acting ram. (Courtesy of Canadian Farm.)

*The Double Acting Ram*—In some cases the water from a stream, which is not fit for drinking purposes, may be used to pump water from a spring to an elevated tank. In this case a double acting ram is used. The spring must be at such an elevation that the water will flow to the ram by gravity. The double acting ram (Fig. 3) is the same as the single acting ram (Figs. 1 & 2) except that a pipe S from the spring delivers spring water under the valve E. The operation is as follows: The water from the spring fills the chamber T and part of it flows out of the working valve D. The water from the river (represented by darker lines in the figure) flows down the drive pipe and out at D. When the velocity of this water in the drive pipe reaches a certain amount, the valve D closes, and the momentum of the water in the drive pipe forces some of the spring water into the air chamber through the valve E, etc. The compressed

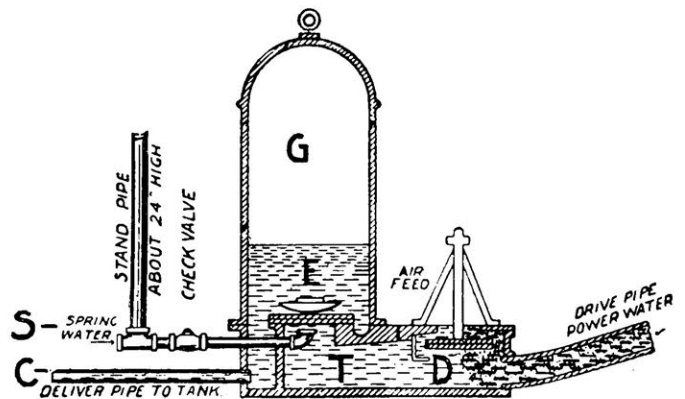


FIG. 3—NIAGARA DOUBLE-ACTING RAM.



air stops the water and starts it moving back up the driving pipe; this backward movement allows four things to happen, namely: the valve E closes; spring water flows through the pipe S into the chamber T; a few bubbles of air are forced in through the air feed (shown between letters T and D); the valve D opens and the whole operation begins again. The compressed air keeps up a steady flow of water to the tank through the discharge pipe C. The stand pipe, or the pipe S, is made high enough to give the spring water a flow which will fill the chamber T and waste some spring water through D. This excess of spring water prevents the river water from entering the air chamber. The check valve on the pipe S prevents the spring water from being driven back up the pipe S on the ramming movement of the water in the drive pipe.

There are two classes of rams on the market, the standard ram and the high duty ram. The standard ram works on a fall of from three to seventeen

feet and will lift water from seven to ten feet for each foot of fall. The high duty ram works on a fall of from one and one half to forty feet and will lift water from fifteen to thirty feet for each foot of fall.

*Prices.*—A No. 4 standard ram costs \$14.00 without piping. The drive pipe is  $1\frac{1}{4}$  inch galvanized iron at 10c. per foot; the discharge pipe is  $\frac{3}{4}$  inch galvanized iron at 6c. per foot. The length of drive pipe is the same as the vertical height the water is elevated. Such a ram uses 4 gallons per minute and will lift 500 gallons a day. If the fall is 3 feet it will elevate this amount 20 feet; if the fall is 17 feet it will elevate the same amount 120 feet. The cost of a 500 gallon tank is about \$20.00. A high duty ram using 4 gallons a minute will lift about 650 gallons per day under the conditions of fall and elevation given above. It costs \$40.00.

When once installed the ram works away day and night, month after month without attention, and after the first cost the only expense is for new valves about once a year.

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## The Aims of a Course in Cookery.

By MRS. E. B. RUTTER, Instructor in Household Science, Macdonald College.



**T**HAT a cookery course is intended to make a girl a good cook is certainly true as far as it goes, but its aims are wider and vastly more important. A course in cooking should develop accuracy, system, resourcefulness and intelligence.

The educational value of cookery is very high. The senses, the memory, the æsthetic tastes, in fact every mental activity is brought into play. The muscles are made to respond surely and quickly, and when the will fails to concentrate all its forces the result is far more disastrous than failure in solving a mathematical problem or in translating a Latin idiom.

In conducting a cookery course, just as in any other course, we proceed from the simple to the complex, from the known to the unknown, both in manipulation, in combination, and in principles involved. Each lesson calls for a greater outlay of nervous energy and a little more muscular skill. E.g.—In planning lessons on fruit preservation the methods involving the simplest principles and easiest manipulations should come first, thus:—

1. Jelly making. 2. Pickling. 3. Canning in syrup. 4. Canning in sterile water.

A student of average intelligence should then be in a position to preserve any fruit or vegetable by any method, because all the principles underlying successful canning have been slowly and surely grasped.

The course may naturally begin with the different methods employed, as:

boiling (rapid and gentle), simmering, baking, broiling, typical foods as rice, vegetables, fruits, beef being chosen. The student is first made acquainted with the uses of a thermometer which is placed in a saucepan of cold water over the fire. By careful observation changes are noted and explained, and thus clear ideas are gained of the meaning of simmering, and rapid and gentle boiling. When the water is in rapid motion a few grains of rice are dropped in. The grains are driven apart. Discussion on such points as whether rapid boiling is a good method of cooking potatoes, whole fruits, etc., whether it is a good method for rice, the economy of this method, follows. In a similar manner the other methods are taken up.

The typical food materials, starch and albumen, may then be studied, experiments being performed to ascertain solubility in cold water, effect of moist and dry heat, effect of acids. Simple tests for the presence of these substances in foods are demonstrated, after which the simple typical foods as cereals, milk, eggs, meat are considered, first as to source and structure and then in regard to chemical composition obtained approximately by individual test and experiment. Then as the student has already been made acquainted with the different methods of cooking and knows from her own investigations the effects of heat on these food materials, she is now in a position to decide by what method or methods these foods should be cooked, and is able to give reasons in each

case. Their composition is also a clue to their value as foods both from the standpoint of digestibility and nutritive value. No cook book is necessary, for the student has worked out the recipe by her own investigations and reasoning, and the notes taken on each lesson are her own.

When all the simple foods have been studied in this way, food materials in combination are then taken up, e.g. a white sauce. The student knows the ingredients, and from experiment the nature of starch, and so is led to make out her own proportions of ingredients and the method or methods of combining them. Cream soups naturally follow, and she knows how to vary the proportions by means of previous knowledge of the vegetable or food called for, e.g. a starchy vegetable requires a thinner sauce. Appreciating the value of vegetable stock she makes use of it as a part of the liquid in the soup. The same idea is followed out in the making of batters and quick-breads. A muffin batter is perhaps the leader and by close thinking the student is enabled to work out a schedule for butter cakes, varying each recipe according to richness, addition of fruit, and flavoring. By this time she has acquired considerable skill in manipulation and has mastered all the outstanding principles in simple cookery and is prepared for bread-making.

A twelve weeks' course in the study of bacteria, yeasts, and moulds, renders a study of the yeast plant in the cookery class unnecessary. Bread is made first from home-made yeast, and then from the compressed and dried cakes. No lesson seems to arouse so much genuine

enthusiasm as the bread-making lessons, and why? When properly presented an otherwise blind and tedious task becomes one of intelligent mastery since the cook knows her materials, knows at each step the biological and chemical changes which are taking place under her careful manipulation. With keen interest she carries her materials through the different stages of bread-making until the oven is reached and there after an anxious watch for the development of an ideal crust and crumb, she displays with pride the product of intelligent workmanship.

Pastry, gelatine and frozen desserts, and the more elaborate classes of dishes follow, after which more attention is given to the proper selection and grouping of dishes to constitute a well-balanced meal. The student is then required to make out menus with different cost limitations, taking into consideration the season, and the age and requirements of the family. These menus are then brought before the class for criticism and correction.

Much importance is given to the matter of substituting dishes for others of the same food value; in making out menus for vegetarian dinners; meals suitable for children including the school lunch basket, and last but not least, the conversion of left-overs into palatable and appetizing dishes.

Unless the girls of to-day are taught how to buy, how to cook and how to save, we cannot hope to have the problem of the ever increasing high cost of living solved by the home-makers of the future.

## A South African in Ontario.

By MISS J. C. VAN DUYN, Macdonald College.

EDITOR'S NOTE.—The following article by Miss Van Duyn, President of the Senior Household Science Class, is certain to interest our readers, giving as it does the impression of Canadian life gained by one brought up in a country so far distant and so widely different from this as South Africa. The writer of it delivered a much appreciated course of lectures to many of the Women's Institutes in Ontario last summer.

Being particularly anxious to become acquainted, as far as possible, with

year ago I arrived from a country where Household Science is as yet quite a new departure, and where mothers still scoff at the idea of sending their daughters to schools or institutions to be taught what they consider themselves quite capable of doing. There is, too, the fact that the Ontario women are probably the most advanced in the world as far as household matters are concerned. But one thing, however, I would like to explain, namely, that



HOUSEHOLD SCIENCE GIRLS. GRADUATING DAY, JUNE, 1910.

conditions in Canada, and more especially with that great movement, the Women's Institutes—which has done so much noble work for the women of Ontario, I was more than grateful to the Secretary—Mr. George Putnam—for my appointment, last summer, as one of the delegates.

No doubt it savours of boldness on my part, as well as egotism, to have launched out on such a big undertaking, when it is remembered that only a

my object was not so much to teach, but rather to learn from the women, and I am grateful for the invaluable knowledge I have gained. At the same time it may be mentioned in my favour that I did not come to Macdonald College wholly ignorant of the many branches the Course embraces, so that I was able to assimilate to far greater advantage what I learnt here than I otherwise should have done.



In South Africa we are almost entirely dependent upon unskilled Kaffir labour (male)\* and consequently we learn to do many things for ourselves. And for this very reason I think there is such a crying need for instruction in Household Science, for although Kaffir labour is always obtainable, it remains for the mistress to train them, and if she is ignorant as to how things should be done, what is going to happen?

But I am afraid I have digressed from my subject. During my tour, I was much impressed with the great intelligence which the women displayed, and how readily they grasped and discussed unreservedly any problem that was brought up. Another point which particularly struck me was the very pleasant and genial spirit which was evident everywhere. Never have I come across more cheerful and light-hearted women, and the whole atmosphere seemed to inspire one with the feeling that life after all was worth living.

The Institute seems to have drawn the town and country women together, and to have caused a mutual feeling of sisterhood to exist; while the social unity which is afforded by the monthly meetings is undoubtedly greatly appreciated by those women living in the country, who otherwise would have spent lonely and uninteresting lives. This sad condition is only too prevalent in the Transvaal, for as yet there are few railway facilities, and in some of the remote districts months pass without the sight of any people other than the members of the family. Is it to be wondered that, at the sight of a stranger they are so timid and shy

that they stand and peep through the window or key-hole before they can summon up sufficient courage to put in an appearance? I think in an advanced age like this it is deplorable that such a state of affairs should exist; and for this reason it is my intention on my return to go and work amongst the women in the country districts in order to try and better the conditions surrounding rural life; and by teaching improved methods, and the why and wherefore of doing things, I may be able to awaken an interest in the work which is, at the present time, looked down upon as degrading by the poor whites. Yes, I am burning with anxiety to go back and spread the gospel of Household Science, and to tell my countrywomen of the splendid work done by the Women's Institutes here and their far-reaching benefits. I hope it will not be long before we shall have similar organizations, when housekeeping will be looked upon as being as honourable a profession as nursing. And not until then can we ever hope to solve the difficult problem of labour.

I believe it would be difficult to estimate how much good has been done by the Women's Institutes during the time they have been in operation. The great principles of sanitation have been taught in the homes; the most healthful and rational way of feeding families, to make them strong and healthy in body and mind; a better understanding of the values of different kinds of foods; while the demonstrations which were carried on from time to time have been useful to show not so much the ways of cooking and preparing new dishes, as the fundamental principles of cooking—why and wherefore certain things are done. The women have also been taught good busi-

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\* The Kaffir men are employed in the houses, while the women are left in the kraals to do all the field work.

ness methods, in conducting meetings, keeping accounts, and in being able to discuss intelligently the different subjects brought up, which have broadened their ideas and stimulated an interest in the work of their households by looking at it not as a drudgery but as something to be reduced to a science. They have also derived great benefits from the opportunity of studying newer and more approved methods, and labour-saving devices; while the Institutes have been the means of drawing out the greatest talent and knowledge from sources the least looked for, and the literature distributed by the Ontario Department of Agriculture has proved of immense value.

It was indeed hard to realize that some of these handsome double and treble-storied houses, which displayed such artistic taste and comfort, with beautiful back and front lawns, were farm residences. In fact, compared even with our own town houses, they are far more conveniently constructed, for it is apparent that some of the newer houses were planned with the object of saving a great many unnecessary steps in doing the work of the household. For instance, the dining room, pantry, kitchen, and cellar or food storage room are, as a rule close to one another. This means the saving of a great many steps in any house.

A great advantage in Canadian homes is the spacious closets and linen cupboards they contain; also the system of carrying hot water to different parts of the house. The plan of heating the houses by pipes leading from a central furnace also struck me as being wonderfully efficient. These things our houses greatly lack. I have become so accustomed to the indispensable closets here that I shall miss

them greatly on my return home, for no wardrobes, no matter how spacious, can adequately fill their place. Another great convenience in the houses here is that wonderful telephone system. It surprised me very much to find that even the most unpretentious houses were fitted up with telephones, while with us such a luxury is exceptional. The only criticism I can make with regard to Canadian homes, concerns the numerous flights of stairs one has to climb. At the home of one of my friends in Montreal there are no less than four flights of stairs from the kitchen to the bedrooms on the top flat. Our houses are built on what is called here the "bungalow" style, with wide verandahs, and although they may perhaps not be so artistic as far as architectural beauty is concerned, still they are certainly not so trying to the health, for I know of quite a few cases here where stairs have proved decidedly injurious to women.

The universal use of labour-saving devices greatly interested me. The housewives maintain—and quite rightly too—that as their husbands use labour-saving machinery to lessen labour on the farm, they also should have conveniences to save their time and strength. In some cases where the women were unable to afford the expense, they clubbed together and bought Vacuum Cleaners, mangles and washing machines, and in some districts the Women's Institute Branches hire out at a small charge (to members only) Vacuum Cleaners.

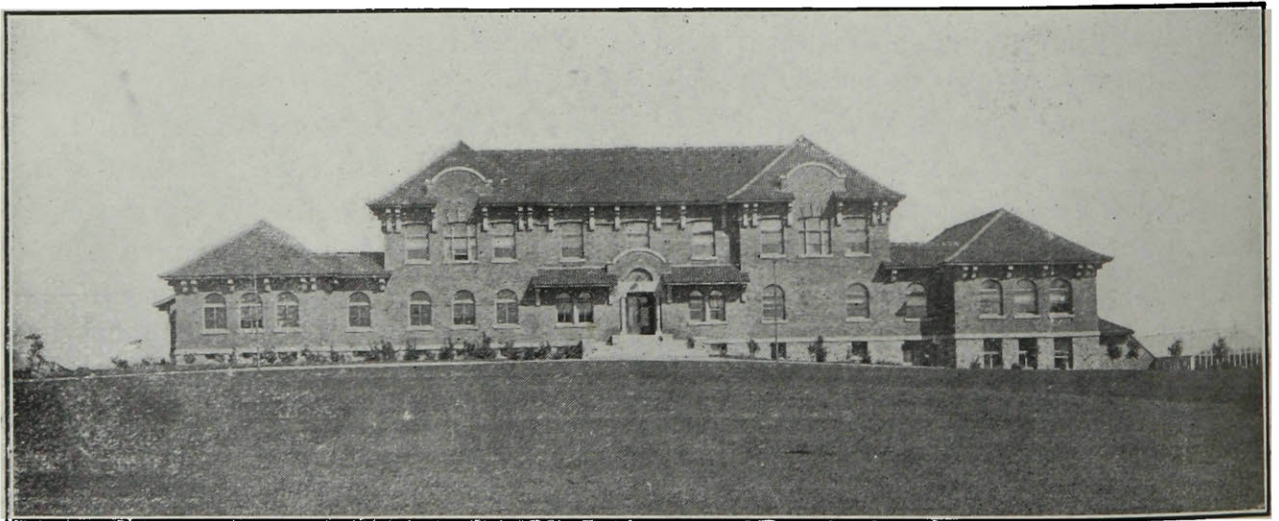
Touching the agricultural conditions. It was a great pleasure to me to see such immense tracts of land under cultivation. In driving from one point to the other we passed fields and fields

of ripening wheat, and acres and acres of corn, lucerne, barley, oats, peas, clover, etc. Every now and then there came wafted through the air the sweet fragrance of the clover mingled with the delicate aroma of newly-mown hay. I enjoyed particularly Waterloo County, which reminds one very much of the Scotch Highlands.

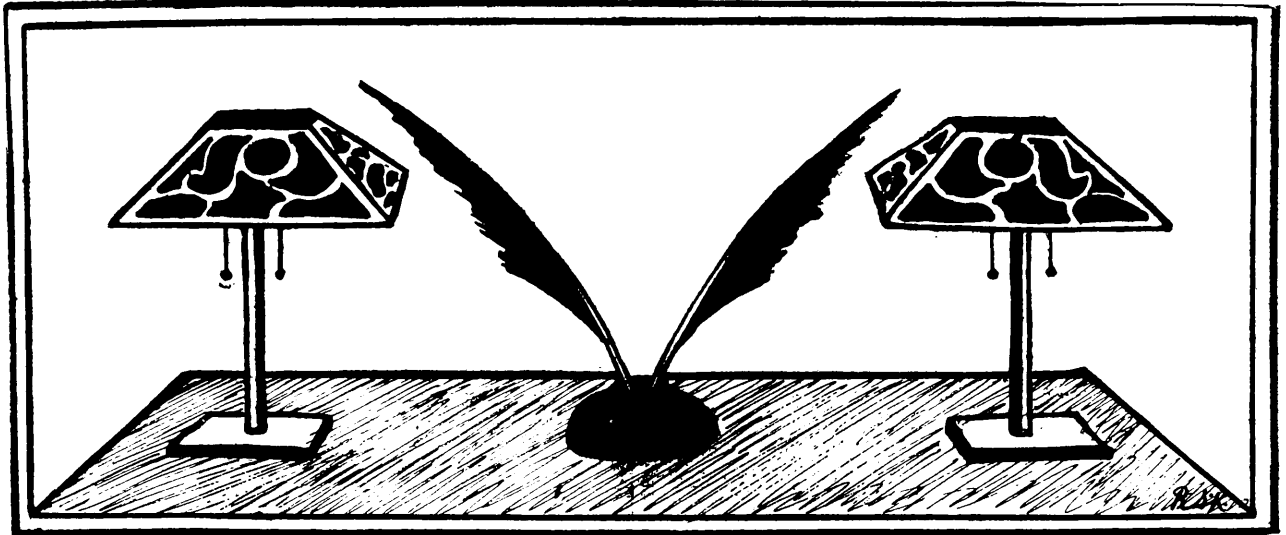
It was remarkable how much soil was under tillage for the specific purpose of feed for cattle and stock, a condition which unfortunately is as yet very much neglected in the Transvaal. The custom there is to what we call "trek" (move) with the cattle and stock to the Bush Veld, where, owing to the mild winters, green pasturage is obtainable all the year round. The natural result, of

course, is that the land is capable of stocking only half the amount. This practice, however, is now being greatly discouraged, and I think the day is not far distant when we shall see as many silos towering into the sky as in the Province of Quebec.

In conclusion I would like to express to the women of Ontario my hearty appreciation of the great and unbounded hospitality they showed me during my tour; while I am also indebted to the three delegates—Mrs. Ashley, from Kingston; Miss Gray, from Toronto; and Miss Campbell, from Brampton—for their helpful assistance and their readiness to supply me with whatever information I desired.



THE AGRICULTURE-HORTICULTURE BUILDING, MACDONALD COLLEGE.



## Under the Desk Lamp

### FEATURES OF THIS NUMBER.

The Editorial Staff are introducing several new features into the Magazine, which will be found, they hope, in all the numbers to be issued during this Session. Imprimis, there is the Correspondence page, in which all readers are free to unburden their minds on any subject likely to interest the College or its friends. Mr. Savage figures in this number as the writer of the first of a series of articles on "How students spend their Summers." In our next issue Mr. Kennedy will occupy that particular platform. The Editors hope to introduce new features in future numbers.

### READER AND ADVERTISER.

There must be very few, if any, of our readers who do not realize how greatly the fortunes of every magazine and newspaper depend on the support derived from advertisers. In fact the advertiser is fully as necessary to the existence of a magazine as the subscriber. This is uncontrovertible, for, as is well known, the advertiser provides the greater part of the money to pay for the periodical.

Now it is perfectly obvious that since every firm advertising in this or any other periodical does so with the object of increasing its trade, it is pretty certain speedily to withdraw its support unless it has good cause for thinking that the object is being accomplished. We earnestly ask, therefore, every subscriber to this Magazine *to patronise as much as possible those firms which take space in its advertisement columns, and to mention the Magazine every time they place an order with such a firm.* By this means alone can the standard of excellence of the Macdonald College Magazine be maintained or increased.

### PRIZES.

Last February the Macdonald College Magazine offered a prize of \$5.00 for the best original story. The response, however, was disappointing. Whether this was due to the pressure of examination work, and the exactions of Professors, or to diffidence on the part of Students and Alumni, is difficult to decide. However, the Editors, in the hope of encouraging the talent to reveal itself which at present lies dormant and unknown, perhaps even



to the possessors thereof, offer the following prizes:

1. A \$5.00 prize for the best original story, length not to exceed 2000 words. This prize will be given by the Magazine.

2. A \$2.00 prize for the best snapshot depicting some scene, or view, or group of persons, likely to be of interest to the readers of this Magazine.

3. A \$3.00 prize for the best original pen and ink sketch, illustrating either a College scene or a College character.

Entry for either of these prizes should be made without delay.

#### SETTLED DOWN

I hope will be our state when this Magazine comes out, and we may say that, for the first time in its short history, Macdonald College itself has really settled down with all the years in all the Schools.

Begin this new era of the College History with

#### GOOD RESOLUTIONS.

Good resolutions with regard to every College activity and if necessary with regard to work. Especially let those resolves be made and kept with regard to your Magazine. Send Contributions. Send the Editor that last "Ode to Spring" you wrote. Don't be afraid to embarrass him with superfluity—that is never the complaint the Editor suffers from. Get advertisements for the Magazine. Remember that the world has not yet attained the Millennium, and our Printers and Engravers have to be paid. If you can't get advertisers, you can at least patronise those firms that do advertise, and ignore those that don't.

Get your friends to buy the Magazine—try and get it well known in your own neighbourhood, and above all buy it yourself, and

#### BE KEEN ON IT,

and on every thing else at College. If you have any talent for a certain thing, go in for it, and if you haven't go in for it; you may develop the talent. A big resident College like this depends for much of its success upon its Social life, its Social life depends on its activities, and its activities depend on you. It isn't intellectual to walk about the Campus looking bored and superior. Whatsoever you do, do with all your might,—from raiding the Horticultural Department down to work. Remember what a lot depends on

#### THE FORCE OF EXAMPLE,

and in this connection we would heartily congratulate certain of our Professorial Staff upon the excellent example they have set during the Summer—at least, excellent in our opinion—but that would make an excellent subject for our Correspondence Columns. It would arouse keen controversy, no doubt. It would be easy to gauge the opinion of some of our fellow-students, but the discussion would nevertheless be most interesting.

#### DON'T BE TOO MODEST,

but write to the Magazine,—not on that particular subject perhaps—but on any interesting topic, any grievances, or any suggestions. There are plenty of all three—but not in the Magazine.

#### CAN YOU SHOUT?

If so, go out and exercise that ability at the football matches. The cheering of the Macdonald men is noted, and judging from the sounds in the Post Office when the light is turned off, the Macdonald girl is by no means deficient in lung power. Macdonald College this term is in a league, and struggling for glory in the shape of a silver cup. We can't all play football, but we can all help the players with our presence and our voices.



# CORRESPONDENCE

To the Editor,  
Macdonald College Magazine.

Dear Sir,

Now that the third annual Field Day is approaching, it seems to me that some step should be taken to provide a more suitable track on which to hold the various foot races, than that on which these events have hitherto been held.

On looking over the records which now stand for races of 100 yards and upwards, I find that these are anything but creditable to an Institution such as this, and I am certain that the time for many, if not all, of these races could be reduced, if these events were held on a cinder track instead of being run on a macadamized road, as has been the case in previous years.

The cost of laying out a track of, say, 440 yards, is not great, and there is no conceivable reason why the Athletic Association (in the event of the Governing Body objecting from a financial standpoint), should not be able to meet the cost itself. If the Field Day, which has hitherto been one of the most popular events of each College year, is to continue, a more satisfactory track must be provided, for at present the records which stand do not represent the racing ability of those who hold them.

Hoping that the Athletic Association will take up this matter, I am

Yours faithfully,  
ENTHUSIAST.

Macdonald College. October 1, 1910.

Macdonald College.  
October, 1910.

To the Editor of the  
Macdonald College Magazine.

Dear Sir,

I should like to take advantage of your columns to mention a matter which is, I think, an important one in the College. That is, the lamentable lack of modern fiction in the College library.

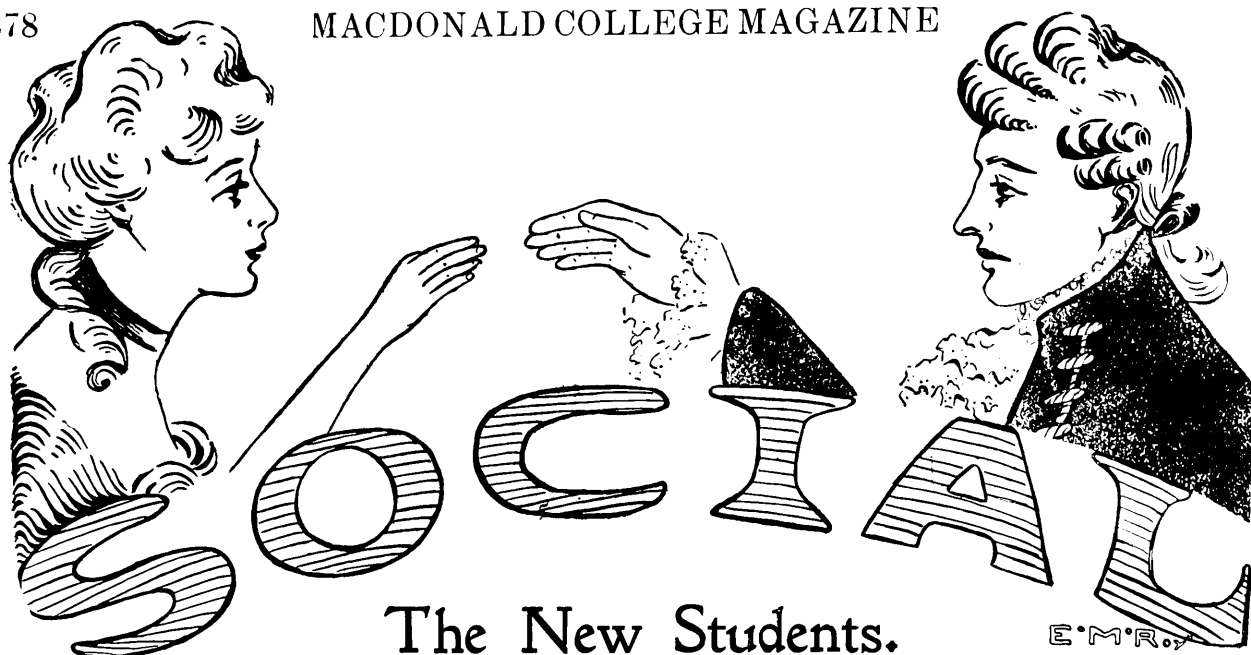
I am by no means an admirer of many modern novels, and I am an ardent admirer of those epoch-making authors of the past. But it must be remembered that many modern writers are making the modern epoch, and we should not leave it to our children to appreciate that fact.

Let us therefore have a larger number of books by the best modern authors accessible to the Macdonald Collegian in the College Library.

How is this to be done?

I should like to suggest a custom which obtained at my old School, where every fellow, when he left the School, presented a book with his name inscribed therein to the College Library as a "leaving present." Could not we at Macdonald adopt that method of perpetuating our memories?

Yours truly,  
READER.



## The New Students.

**T**HE opening of another Session is inevitably, and as a matter of course, accompanied by the arrival of a numerous array of new students. That scanty remnant of the School of Agriculture which has lingered on at the College through the Summer, working in the various Departments has, from its corner in the College Dining Hall, viewed with great interest the sudden filling up of the scores of long-empty tables by hundreds of "Teachers" and "Sci-

ence girls." And, at the present moment of writing, the ranks of the male students have just been reinforced by four Classes of the School of Agriculture. Those gentle attentions which new students usually receive at the hands of their seniors have already been rendered in the Women's Building, and will doubtless not be omitted in the Men's. When the interesting ceremony is over, the students will, we suppose, settle down to the work of making acquaintance with their studies and with each other.

## The Girls' Literary Societies.

**W**ITHIN a month of their first assembling at Macdonald College, the four classes comprising the Students in the Women's Building not only elected their Year officers, particulars of whom are to be found on the next page, but organized Literary Societies of their own, which have already more than justified their existence by several successful meetings.

There are altogether five Societies, the three Divisions of the Model Class, and the two Divisions of the Elementary Class, having each its own literary gathering. This plan was felt to be

better than that of having a large Society composed of the members of the whole School, as it would, among other advantages, present fewer terrors to the girl debating or reading in public for the first time. Several Debates have already been held by the various Societies, and have given rise to great interest and encouragement to the members.

The Presidents are as follows:—

Model Class, Division A, Miss M. Gould. Model Class, Division B(1), Miss M. P. Boa. Model Class, Division B(2), Miss F. Rittenhouse. Elementary Class, Division C, Miss Mabel Locke. Elementary Class, Division D, Miss E. Reed.

# How Students Spend their Summers.

## I. Three Weeks on a Round-Up.



BETTER pack up your war-kits you two. You'll be riding on the round-up to-morrow." Then the foreman turned his horse and rode towards a neighbouring ranch.

Meeker and I had been enjoying a sunny sprawl in front of the shack before these words aroused us. Now, however, there was no time for loafing. We immediately set about to overhaul our outfits. Saddles, bits, boots, and spurs were rigidly inspected. Stitches were necessary here and there. Meeker's shaps were moulting but that could not be helped. Satisfied that the riding gear was intact, we turned our attention to clothes. Each rolled a heavy sweater, a coat, and maybe a pair of socks, inside a slicker, and strapped the resulting bundle to the rear of his saddle. Our bed, consisting of a waterproof bag big enough for two and lined with many layers of blankets, was spread in the sun. Then when the saddle horses were corraled, we selected our strings. From 130 sleek and active animals we each picked 8, choosing our favourites alternately. To these were added a few inexperienced ones, that had to be taught the business. The education of a cow-pony is not to be taken lightly, for it requires fully as much perseverance, and a longer time to teach a horse to punch cattle, than to play polo. Then we supped and without even a yarn from Meeker, crawled into our beds.

With a pack horse carrying the bed, and the remounts trotting ahead, we joined the round-up next morning. Everything seems to be rushed on this

occasion. Two wagons drawn by four-in-hands were travelling at top speed. Round them, galloping in a mass, and raising a cloud of dust, ran about 150 saddle horses, while behind, stretched into a crescent, laughing, talking and rolling cigarettes, rode a score of hilarious cow-punchers. We were hailed by several old acquaintances, and became absorbed in the outfit.

It is on a round-up that a cow-puncher reverts to his original progenitor, the primitive herdsman. Here it is that all discretion and timidity are unknown. The idea of being considered reckless, tough, and daring, seems to be the only motive for the exhausting manner in which he conducts himself, on this occasion. No opportunity is lost whereby a chap may display his horsemanship or his skill with a lariat. Naturally this makes for lively times, and it is only after some observation that one notices a few moderately rational men aside from the captain.

A round-up day, and most of them are quite similar, is spent somewhat as follows: At the earliest tinge of dawn, the cook makes breakfast. This done, he arouses the camp with an original selection of language. Dressing consists of pulling on one's boots, and tightening one's belt. Some chaps wash. Then every visible eatable, usually coffee (10 horse power) and bacon is rapidly devoured. As soon as it is light enough to see, the horses are caught and saddled. Several strenuous exhibitions of rough riding generally follow this, before all the buckers are tame or tired enough to do anything with. Then in twos and threes



we jingle off under the captain's orders to "ride circle." The prairie, an endless ocean of waving grass, broken occasionally by patches of barren alkali, is always beautiful in the early morning. Later it becomes scorching. Perhaps in the course of our circle we will ride 50 miles, we may find hundreds of cattle, and we may find none. The hours

branded in the morning. Some of us will herd them all night. Then we eat. Meals on a round-up are taken on the run. Sleep, perhaps five blessed hours of it for the lucky, has to be taken on the instalment plan generally, for we work till it is dark, and often herd at night.

And so the days pass, circling, branding and living a free careless life, as-



drift past in any case, accompanied by tales of the great south, good natured jokes, and absolute lies. All cow-boys can spin yarns. At night, or perhaps noon, (in which case we go out again) we join camp, which has moved 15 miles or so from where it was at breakfast. Here large herds of bellowing cattle are waiting to be worked and

sorted weather and a change of company, sometimes a band of nomad redskins, furnishing the variety. Hundreds of square miles are covered, thousands of cattle are worked. This is only a spring round-up, so we take nothing back to ship. The beef round-up will not be for three months or so.

When our task is accomplished, we break up. If this takes place near a town there is always lots doing. Nothing but nervous excitement has kept us awake for the past week. Lack of sleep and hard riding has told on us all. We become happy,—almost hilarious, yet on the return home undergo a corresponding reaction.

Meeker and I loped into the home corral, and rolled off our horses. When we found the inside of the shack, we slept in one lump what we had missed in three weeks. But it is a glorious, fascinating life that holds one in a spell. The only way to feel its great, free charms is to try it.

A. S.

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## Faculty News.



EARLY in September those of the Faculty who had spent their vacation at Ste. Anne's were reminded of the near approach of the re-opening of College by the return of some of their number who had been travelling, either at home or abroad. A few of the more serious-minded, conscious of the weight of responsibility which rested upon them, cut short their trip in order that they might have everything in readiness for the opening of the session; others, believing that the best preparation for the tasks of the coming year lay in thoroughly enjoying the short period of relaxation and recreation, joined their fellow-teachers but a few days before lecture work actually began.

True to the traditions of older institutions of learning, Macdonald College is called upon to chronicle a number of changes in the personnel of its staff. In the School for Teachers the Professorship in French, left temporarily vacant through the illness of Mme. Cornu, has been filled by Miss Bieler. Miss Lawrence has succeeded Miss O'Connor in the Practice School. A number of important changes have been made in the School of Household Science. The positions left vacant by the resignation of Miss Margaret Kennedy and Miss Bigelow

have been filled by Miss Hill of Macdonald Institute, Guelph, Ontario, and by Miss Leveridge of the Mechanics' Institute, Rochester, N.Y. The resignation of the Professor of Animal Husbandry, Mr. H. S. Arkell, was the most serious loss sustained by the School of Agriculture. Professor Arkell resigned to accept a position in the Live Stock Branch of the Dominion Department of Agriculture. He has been succeeded by Mr. H. Barton, B. S. A. Mr. R. B. Cooley, a graduate of the Agricultural College, Guelph, Ontario, has been appointed Assistant. Miss Bagnall is acting in the capacity of Instructor in Dairying during the temporary absence of Miss Janet Macnaughton.

The Royal Commission on Industrial Training and Technical Education visited the College on September 20th. The Chairman, Dr. J. W. Robertson, outlined the purpose and scope of the Commission, after which the Deans of the various Schools gave evidence. As the time available was not sufficiently long to make an extended enquiry, Dr. Robertson announced that a more lengthy session would be held during the latter part of January.

L. S. K.

## The Class Presidents in the Women's Building.



ONE of the first things a new Class does, after taking a few days to enable its members to become acquainted with one another, is to organize. This function, in the case of a Second Year class, is of course more speedily proceeded with, and takes place usually as soon as all its members have returned. All the four Classes in the Women's Building selected their Year Officers within a month of their arrival at the College, and we have pleasure in publishing below a few details about them which will be of interest to our readers. Their portraits adorn the opposite page.

It is our intention in the next issue of the Magazine to publish the biographies and portraits of the four Presidents in the Men's Residence.

So admirably did Miss J. C. Van Duyn, who was President of the First Year Science girls in the 1909-10 Session, fulfil her duties, that she was unanimously chosen to be the leader of the little band comprising the members of the Senior Science Class this year. Miss Van Duyn comes from distant South Africa, having been selected by the Agricultural Department of the Transvaal Government to study Household Science at this College. Born at Porterville, Cape Colony, her earliest education was obtained at the Pretoria "Staat's Meisjes School." Her charming manners and great talents win her devoted friends wherever she goes, and we echo the general sentiment in wishing her the best of luck.

Miss Bessie Stewart is the President chosen by the large Class known as the First Year Science students. Born at Richmond, P. Q., she spent the first

four years of her existence in that locality. At the tender age of thirteen she began to attend the classes of the Montreal Trafalgar Institute, where she continued for three years. She then spent a year at Miss Edgar's Private School, after which she came to pursue the paths of knowledge at Macdonald College, where we hope she will have, as indeed seems probable, a very prosperous career.

We congratulate the ninety girls who comprise the Model Class of 1911 on their choice of a President—Miss D. I. Petts. Miss Petts first saw the light in Montreal a few short summers ago,—how many they be the present writer knoweth not. Her earliest years were spent at Westmount, and her education was obtained, first at King's School, where she was for six years, and subsequently at Westmount Academy. After three years here she joined the Elementary Teachers' Class at Macdonald College in the fall of 1909. We wish her every success both during the coming Session and in her after career.

To Valleyfield, Quebec, belongs the credit of being the birthplace of Miss Lily Chadwick, President of the Elementary Teachers. At the Gault Institute there, she gained her education, remaining there for twelve years. In the summer of 1910 she made up her mind to follow the noble but difficult profession of Teaching, and with that object in view joined the Elementary Class at Macdonald College this Fall. Her classmates, impressed by her genial manner and evident ability, forthwith elevated her to the position of President of the Class.



MISS J. C. VAN DUYN.



MISS B. STEWART.



MISS D. I. PETTS.



MISS L. CHADWICK.





## The Students' Summer at Macdonald College.



AS has been the custom since the College opened, at the beginning of the Summer an opportunity was given to a limited number of students to obtain work in the various Departments. That this opportunity is considered a very valuable one was shewn by the fact that more students applied for work than there was actual room for. Both in the Cereal Husbandry and Horticulture Departments where work is being carried on along scientific lines, ample scope is given to the student to apply the knowledge of crop improvement gained by him during the Course.

It is for this reason, then, above all that eighteen of us stayed on during the Summer, which has been a very profitable and pleasant one. It is unnecessary to go into many details, as sufficient has been said of the nature of the work. Suffice it to say that our tasks were many and varied.

Imagine the ardent Cerealist on his knees putting in grains four inches apart in foundation beds, or strengthening his muscular tissue by the use of the roller. Imagine him well-nigh bursting with knowledge as he wends his way from plot to plot selecting heads and plants for the improvement of various strains. See the zealous Horticulturist all enthusiastic as he makes potato cuttings, transplants young tomato plants or strips onions. See him scowl at the distasteful task of apple packing or cider making.

We were always compelled to quit work after a comparatively short day of ten hours, having made one stop for dinner from twelve till one o'clock. Breakfast was at 6.30 a.m. and supper

at 6 p.m. It was noteworthy that our appetites were not at all impaired by hard work and the absence of the fair sex from the dining room; and we have no doubt that Miss Mortimer would rather cater to a full dining room than to a band of Student-workmen.

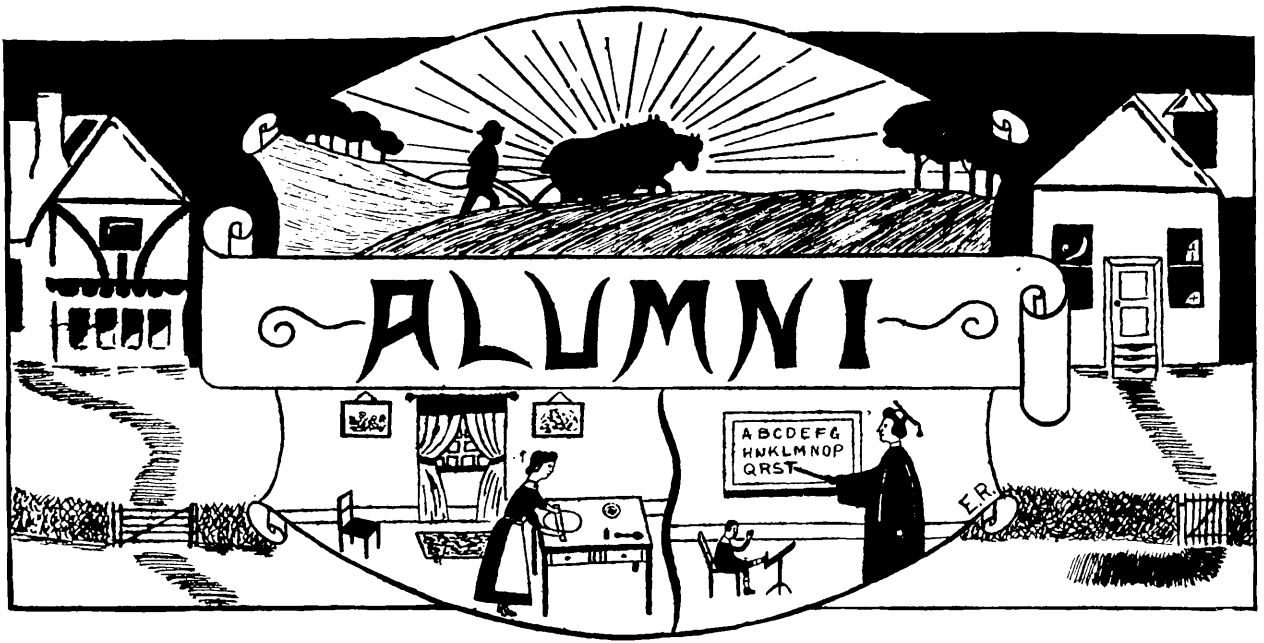
On the social side there is not a great deal to be said, especially as the School for Teachers and that of Household Science closed on the 16th of June and did not reopen until the 1st of September; but those of the Faculty who were here spared no pains in making our stay an enjoyable one.

The Summer Students' annual picnic (for this has been a feature of the Summer's work ever since the students began Summer work at the College), owing to unpropitious weather on the day appointed, took the form of games and picnic supper in the Gymnasium. In a game of indoor base ball, in which both boys and girls took part, great feats were accomplished. The boys displayed great skill in running the bases on which girl fielders had been placed, but the girls were more successful with home runs, as the man on the home base proved a poor catcher when he tried to stop a fall. Altogether a very enjoyable afternoon was passed, although the rain had prevented us from going out of doors.

Of the spare time at our disposal some of us made use in collecting specimens of plants and insects for reference during the Course, and this proved a very pleasant and interesting pastime.

The Summer has gone, but we can undoubtedly say that the memory of it will long remain with us.

J. S. D.



### AGRICULTURE.

Of the thirty-eight students who began the course in Agriculture on November 12th, 1907, only twelve are left. Of course the Class which will graduate next spring is larger than twelve as it has been joined every year by men who have come from other Colleges.

Those who were members of the Class and have already dropped out intend to be back at graduation next spring if it is at all possible, and the Editors are willing to give whatever help is in their power to make a reunion a success, so that each one who returns may get the most good and enjoyment from the visit. The Class in Household Science which was here the first two years has decided to have its first reunion at that time too, so that is a further attraction. It is hoped that the Teachers and members of other Household Science Classes, who have been here, will arrange to be here at that time too. Correspondence regarding arrangements may be addressed to the "Alumni Editors."

"Charlie" Lee intends to be back to be at the graduation of his former classmates next June. He likes his work on his farm at Meyronne, Sask.

\* \* \*

Morley Honey was down for the closing last June and sat with the fellows while they made their little row. He is looking well and happy, but we think he wishes he had remained with us.

\* \* \*

Harry Hayes of the "H. H. H. H. Combination" has bought a farm in the West to which he moved some months ago. He seems to be liking his location very well. We wish him much success in the building of that little home.

\* \* \*

The Eastern Exhibitions' Prize Lists have been pretty well filled with the name of "Pipes" in the Jersey section. Roy B. of that ilk is forging ahead as an exhibitor. We wish him all success.

\* \* \*

Lyle McLeod is still engaged in journalistic work in Toronto. We hear that he intends being down here on

his way home to "The Island" some time before Christmas. We can bespeak for him a hearty welcome from such of his classmates as are here.

\* \* \*

"Dave" Thomson, who was here the first year, is farming at his home in Pontiac County. Dave's exploits in water-throwing are the theme of many conversations of the "old days."

\* \* \*

"Tiny" Philips has secured a position in Massachusetts and took up his duties last month. We wish him all success in his work. His address is "Cohasset, Mass."

### SCIENCE.

Miss I. M. Hall, Science '09, was delegate from Cornwall to the Conference at Knowlton last summer under the auspices of the Young Peoples' Missionary Movement. Miss Hall stayed off at the College for a few days on her way home to Cornwall, Ont.

Miss E. Sellar, Science '10, has, since her return home, resumed her studies in music.

Miss Creelman, Science '09, is Supervisor of Sewing under the Vancouver Board of School Managers. She has been very successful in that position during the past year. We hope for her continued success. She intends coming East for Convocation next year.

Miss Ethel Fraser, Science '08, was a recent visitor to the College to see her sister who is a student here this year. Her address is 600 Ontario St., Maisonneuve.

Misses F. and E. Trenholme, Science '09 and '10 respectively, returned to

the College this summer and took a course in Poultry.

It would be noticed by readers of this magazine that Miss E. M. Roy, of Sabrevois, Quebec, had been awarded a special prize for a drawing which was reproduced in the last edition. Miss Roy was a student in the Class of Science '08.

Miss Jean Macleod, of the Science Class of '09, is teaching Household Science in the Macdonald Consolidated School at Hillsboro, P. E. I.

Miss Agnes Macdonald, Science '09, stayed in Ste. Anne's for a few days on her way to Prince Rupert, where her future home will be.

### TEACHERS.

For some time it has been felt that as each class graduated from Macdonald College its members were more or less lost track of, and so the Model Class of 1910 decided to set on foot a movement for an Alumnae Society which should consist of the graduates of each Model Class. An attempt is being made to reach the members of the two former classes through their respective presidents. We hope that all Model Class graduates who see this will at once send their names to the President of their year and so save time and energy in the organization of this most useful Society.

Miss Grace E. Hatton, who taught in Lacolle, Que., last year, is this year teaching in Fairmount School, Montreal.

Miss Hyde, of the Elementary Class, '08, is teaching at Chateauguay Basin along with Miss Cummings, one of last year's graduates of the Model Class.



Among the former students of Macdonald who returned as Teachers for a ten days' holiday in June were Miss Wilson, Miss Dickson, Miss Pride, Miss Killingbeck and Miss Biltcliffe.

The engagement is announced of Miss Ibbotson, Model '08, to Mr. Barker, of Omaha, Neb.

Miss M. McKinnon is Principal of the school at Gould, Que., Miss Davis at Kensington, and Miss Sargeant at Lacolle.

Miss Emily Blomeley, of the '10 Model Class, is living at 131 96th Street, Bay Bridge, Brooklyn, N. Y.

Miss Grace Rowlands, Model '10, is remaining at home this year to study Art and Music.

Miss V. Hopkinson is Assistant Principal in Waterville Academy, Waterville, Que.

Miss Edythe Watson and Miss B. Henry, Model '10, are teaching in Mount Royal School and Sarah Maxwell School respectively.

Miss F. Petts and Miss E. Foster are teaching in the Earl Grey School and the Aberdeen School respectively.

Miss Vera Telfer, Model '08, has deserted the Province of Quebec for the State of New Jersey. She is teach-

ing in the town of Allenhurst in that state. Her address is "Edgemere Drive," Allenhurst, N. J.

Miss Carmichael, Science '08 and Model '09, has, since she left Macdonald, been teaching at New Carlisle, Que.

Miss Grace Harling, Model '10, is teaching in King's School, Westmount. We believe that Miss Harling was the only graduate from last year that Westmount was fortunate in engaging.

Miss J. K. Hogg, who was President of '10 Elementary Class, and who on account of her health had to discontinue the course, is remaining at home this year and studying Music.

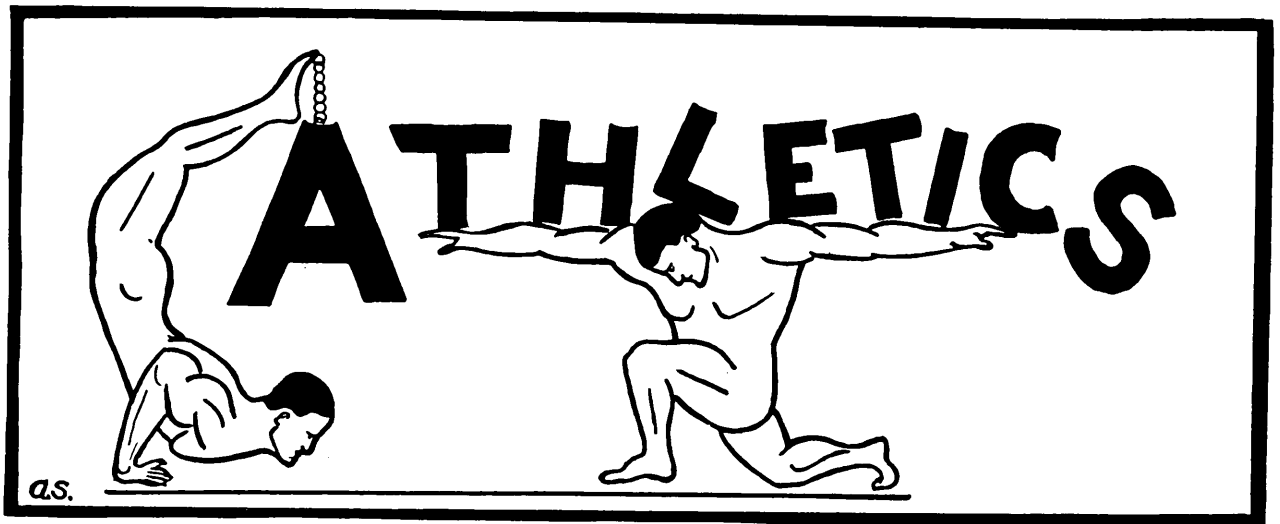
Miss Martha Scott, Science '08, is Gymnastic Instructor in Fairmount School, Montreal. Her address is 2206 Mance Street, Montreal.

Miss B. Farquharson, Science '09, and a graduate of the Model Class of '10, is in Camrose, Alta.

Miss Lea Tanner, Model '10, is located at Stanstead, where she is teaching French in the higher grades. Her sister has charge of the Elementary grades at the same place.

Miss May Folkes, '09, is teaching in the French Methodist Institute, 95 Greene Avenue, Westmount.

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It is a known fact that for students to obtain the greatest benefit from a College course they must not only cultivate their minds but also give due attention to their physical development. This is necessary that they may be classed as all round men. Athletics are recognized by intelligent people of to-day to be the most satisfactory means by which young men may improve their moral as well as their physical condition. By fair competition in the different sports and games they have the spirit of fairness and honesty ingrained to such an extent that it becomes an important factor in their character. They are at the same time undergoing healthful and beneficial exercise.

Now that we have returned and settled down to a new Session, we must—both new and old students—unite and give due attention to this important item in our course, so that we may obtain all that is to be got out of our year at College. The senior students realized the necessity of having the matters relating to Athletics under competent direction. They therefore organized the Macdonald College Athletic Association soon after the College opened. This Association has now grown to be one of the strongest organizations among the students, being

operated solely by them and favoured with the hearty co-operation of the Faculty.

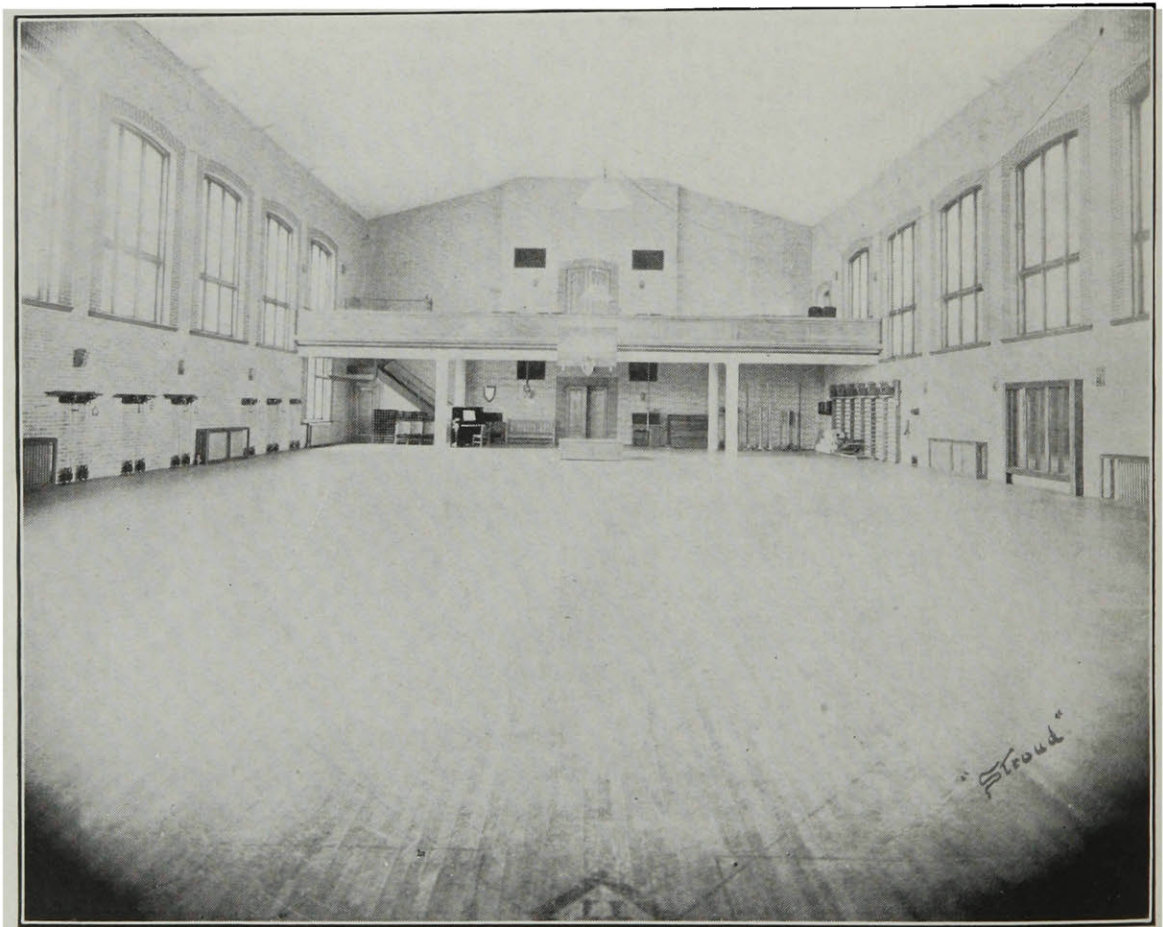
The new students particularly should bear in mind the necessity of every one taking an interest in the Association. Whenever a chance offers they should communicate any ideas that occur to them likely to be of benefit to the Executive, and thus aid in the uplifting of the good name of our College Athletics.

Under the Association's supervision the students may participate in all athletic games, such as football, hockey, basket-ball, indoor baseball, etc., matches and league games being arranged with as many teams as are available. In previous years there has been a rather marked tendency on the part of some students to stand back and let a few go ahead, with the result that these same few are found representing the College on nearly all the different teams. This state of affairs is blameable to those among us who are to be found ever on the side-lines. Men who may not be very efficient at the beginning but are willing to try are the type of student that should swell the ranks of our Athletic Association, every one of them being determined to do *his* share in making every line of sport a success. This interest, if

shewn by all, will encourage the captains of our different teams to plan more systematic training and will give them greater scope in selecting men to uphold the good name of the College on the field of Sport.

At the present time Football should be given every one's attention, and the students should hasten to practise as soon as possible as the season is rather short and the other games will soon be

year that we all belong to one and the same College, and are fellow-students working for the same purpose. Let us all strive to prevent, throughout the whole Term, the development of Class-spirit to an undue extent—to the point at which all sense of fairness and good sportsmanship are lost in the wild endeavour to win at any cost. Let us never forget our College motto, "Mastery for Service", and



THE GYMNASIUM, WOMEN'S RESIDENCE.

upon us. Later, the Annual Field Day will be held, and every student who has the welfare of the Association at heart must go into training well before this event, to get into condition for the final test. This affords a splendid opportunity for friendly competition between the different Classes as well as between individual students.

Let us all remember throughout the

ever keep in mind our fixed resolve to play the game.

#### ASSOCIATION FOOTBALL.

Last spring a movement initiated by McGill University was made to form an Association Football League, in order that the game might become, in some degree, more popular among the Colleges on the Island of Montreal, particularly those connected with the

University, and at a meeting of the Macdonald College Athletic Association, held at that time, it was decided that that organization should be represented in the new League.

A delegate from this College was therefore sent to McGill University to attend a meeting of delegates from such Colleges as intended taking part in the League games, and at that meeting it was decided that for the season of 1910 five teams should compete for the Championship.

A constitution was drawn up and adopted, and a schedule of games arranged; this schedule is given below and from it may be obtained the names of the Colleges represented:—

Week ending October 8—Macdonald College vs. McGill. Away. Presbyterian College vs. Wesleyan College. Away. Presbyterian College vs. Diocesan College. Away.

Week ending Oct. 15—Wesleyan College vs. Macdonald College. Away. McGill vs. Presbyterian College. Away. Wesleyan College vs. Diocesan College. Home.

Week ending Oct. 22—Macdonald College vs. Presbyterian College. Away. Wesleyan College vs. McGill. Home.

Macdonald College vs. Diocesan College. Away.

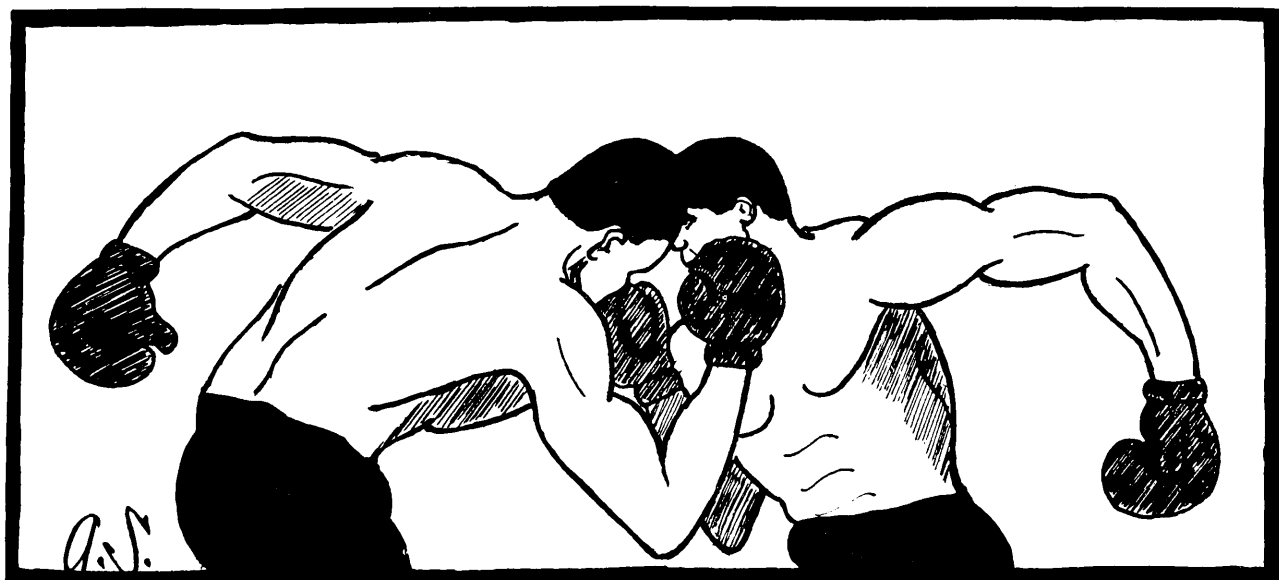
Week ending Oct. 29—Macdonald College vs. McGill. Home. Wesleyan College vs. Presbyterian College. Away. McGill vs. Diocesan College. Away.

Week ending Nov. 5—Macdonald College vs. Wesleyan College. Away. McGill vs. Presbyterian College. Home. Diocesan College vs. Presbyterian College. Away.

Week ending Nov. 12—Macdonald College vs. Presbyterian College. Home. Wesleyan College vs. McGill. Away. McGill vs. Diocesan College. Home.

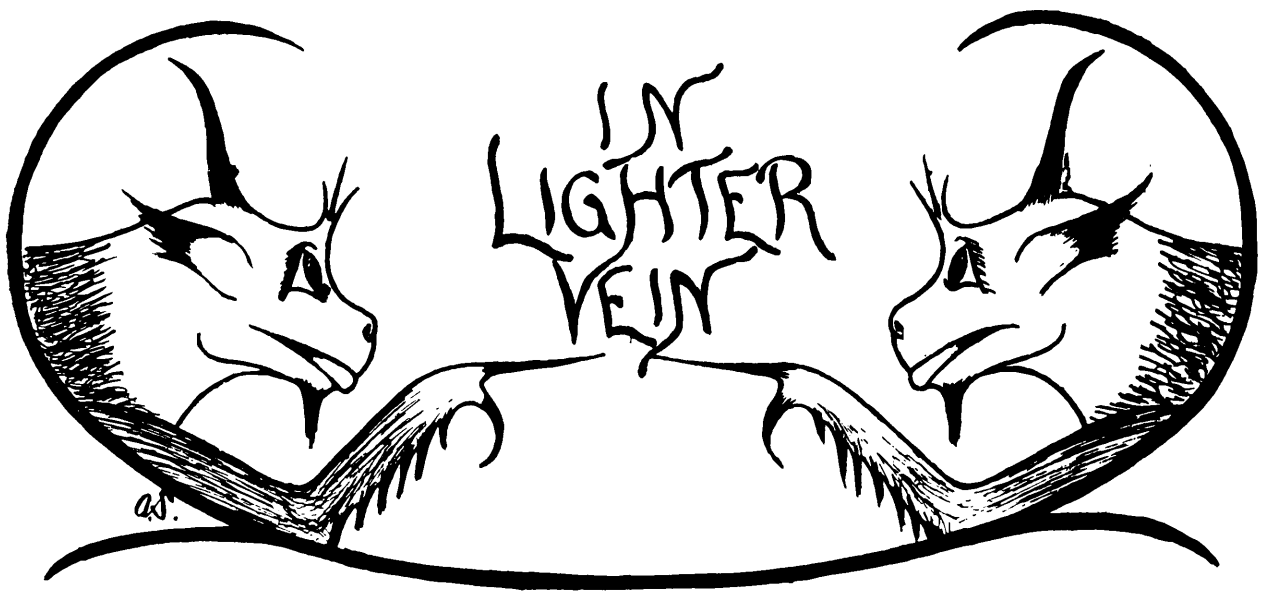
Week ending Nov. 19—Wesleyan College vs. Diocesan College. Away. Macdonald College vs. Diocesan College. Home.

By the time this announcement appears before the readers of the Magazine a number of these games will have been played off, but it is hoped that every possible effort and support will be given to establish a team here which will be creditable to the Institution, and that the step which has now been taken will be the commencement of Association Football as a permanent and popular game among those adopted by the Athletic Association.



AN ATHLETIC MEETING.





## On the Art of Cramming.

### Hints to Macdonald College Students.



HERE was once a man who wrote a book called "Advice to young men (and incidentally, to young women)." This would be a very appropriate title for the present essay, but we scorn to be beholden to anyone for so much as a title. But to our subject.

The art of cramming may be defined as the process of compressing an indefinite volume of fantastic and indigestible information into leaky but elastic craniums for examination purposes.

Now (if you have survived this), we intend in these columns, not to review all the antiquated methods of every inspired idiot who ever tried to fool an examiner, but to draw your attention to our own exclusive special patent up-to-date triumph of the Crammer's art.

Like all works of true genius, it is simplicity itself. Illuminate your prosy facts with the fire of poetry, and you will never forget them. Let the rosy glow of your poetic genius light up the

dull paths of Entomology and Botany, of Cookery and Hygiene, of Pedagogy and Euclid, and your wanderings in the sea of knowledge will be an unmixed joy, both to yourself and your hearers. For example, let us suppose that the Professor has shewn his usual ridiculous curiosity about the best way to kill Aphis. You will immediately fire off—

If to exterminate Aphis you hope,  
Spray the beggar with whale oil soap.

Suppose, again, that you are asked about the habits of the Cicada. Formerly you never could remember that the female cicada couldn't hum, and that the insect pupated for seventeen years. Now you reel it off pat:—

Gaily the Cicadas hum,  
For their wives are deaf and dumb.  
Little wonder they sleep sound,  
Seventeen years in the ground.

If the Professor on whom you bestow this poetic gem happens to be a married man, he will give you full marks for it.

We shall next give an exhibition of what can be done with the gay science

of Anatomy. Armed at all points with choicest poems from your store, you fear no examination paper. Does the Examiner ask you for the bones of the leg? You triumphantly reply:—

First of all, we beg to state,  
Comes the os innominate.  
Into this the femur fits,  
We mean of course the thigh-bone. It's  
Succeeded by a little feller  
Called the kneecap (or patella).  
Next in order comes the tib-  
-ia, and back of it the fib-  
-ula, and then the tarsals come,  
Seven small bones, To increase the sum  
The metatarsals <sup>3</sup>five we add.  
And now I'm confident you've had  
Enough of these continual changes;  
We'll end up with fourteen phalanges.

The examiner is sure to be powerfully moved by an effusion such as the foregoing. However, nobody can make you responsible for either his emotions or the language he sees fit to indulge in. But we digress.

The great beauty of our method of assimilating Learning is that it can be used with any science, from Pedagogy to Pudding-making. Imagine, for example, that you are answering a paper on Cookery, and that you want a recipe to make a plum pudding. Out of a brain bristling with verse-recipes you pick the right one, and down it goes. Thus:—(The theory may possibly be a trifle weak in places, but the examiner is sure to be dazzled, or at least dazed, by the haunting loveliness of the verse)

(1)

To a gallon of flour,  
Worked up half an hour  
With plaster of Paris and rum,  
Add a bushel of plums  
And six quarts of bread crumbs  
Cemented with mucilage gum.

(2)

Place the foregoing lot  
In a large boiling pot,  
(Wrapped in any old cloth that comes handy).  
Then boil it for quite  
Two days and a night,  
And serve with red pepper and brandy.

But we have said enough. If our readers will faithfully pursue the method we have outlined above, they will never have occasion to say of themselves (as we once saw scribbled on an examination desk),

One more unfortunate  
Plucked in exam.  
Rashly importunate,  
Muttering "Bother."

\* \* \*

Teacher '11 (in the Day School)—  
"You don't know what this word is?"  
Pupil—"No."

Teacher—"What is your coat made of?"

Pupil—"Father's old pants."

\* \* \*

Old Boy—"I tell you, old chap, you don't know the joys and felicities of a contented married life, the happy flight of years, the long restful calm of——"

Student—"How long have you been married?"

Old Boy—"Just a month."

\* \* \*

Junior—(in Montreal hotel)—"Look here, waiter, this lobster is without a claw, how's that?"

Waiter—"You see, they're so fresh, these lobsters, they fight with each other in the pantry."

Junior—"Well, take that one away and bring me one of the winners."

A student from the West dines in a swell hotel in town, and orders cheese. It is brought. Waiter—"I'll bring a fork, sir."

Student—"What for?"

Waiter—"The Gorgonzola, sir."

Student—"A fork's no good, bring a revolver."

\* \* \*

Post Mistress—"This letter is too heavy; you'll have to stick another stamp on."

W. R.—"But I'll only make it heavier if I do that."

\* \* \*

Alumna (visiting College)—"Yes, dear, I was married last month. I'd like you to call on me and see the pretty little flat I have."

Jealous friend—"I've seen him, my dear."

\* \* \*

Sophomore (at breakfast)—"Don't be afraid of the bacon, we get lots of it."

Freshman—"Oh, not at all. I've seen a piece twice as big as that and it didn't frighten me a bit."

\* \* \*

Science '12—"Do you think it would be conceited for me to tell my friends I made this dress myself?"

Teacher '11—"No. Not conceited, my dear—superfluous."

\* \* \*

Inquisitive Freshman—"Why do you wear rubber gloves on your hands?"

Barber—"So that my celebrated hair restorer won't raise hair on them."

He sold a bottle.

\* \* \*

Young lady—"You say you were on a raft for six weeks and had nothing to eat but mutton. Where did you get the mutton from?"

Old salt—"Well you see, miss, the sea was very choppy."

Edith—"I see the corset factories have resumed operations."

Lillie—"Ah, that means tight times again."

\* \* \*

Elwell (to Quebec farmer)—"I suppose you practise a systematic rotation on your farm?"

Farmer—"No, we always use a manure spreader."

\* \* \*

In the Day School—"Now, Charlie, you must be a very good boy. You have a nice new brother. Aren't you pleased?"

Charlie—"Oh, I don't know. It's always the way. Just as I'm getting on in the world, competition begins."

\* \* \*

Sophomore—"Just think of it—a full Christmas dinner for a quarter—soup, turkey, plum pudding, pineapple, coffee——"

Freshman—"Where?"

Sophomore—"I don't know where, but just think of it!"

\* \* \*

Exasperated Purchaser—"Didn't you guarantee that this parrot would repeat every word he heard?"

Bird Dealer—"Certainly I did."

"But he doesn't repeat a single word."

"He would repeat every word he hears, but he never hears any. He's as deaf as a post."

\* \* \*

Visitor—"You study science here, don't you? Which branches do you find most absorbing?"

Aggies—"Science '11 and Science '12."

\* \* \*

Freshman—"I tell you, fellows, that girl of mine has brains enough for two."

Chorus—"Then why do you tarry? Buck up, kid, and marry."

Junior—"Say, Critchley, why don't you get over to breakfast on time?"

Critchley—"Shure it wouldn't be any good if I did come because I'm always fast asleep."

\* \* \*

Suffragette (lecturing)—"The question, therefore, that suggests itself is—Under what conditions ought women to be allowed to sit in the House of Commons?"

Voice from the rear—"Muzzled!"

\* \* \*

Wood (at dinner)—"Is there such a thing as a white carrot?"

Logan—"Yes, of course. White carrots are called parsnips."

#### ANSWERS TO CORRESPONDENTS.

Anxious Inquirer—No; you are wrong. The letters "D.Sc." after a man's name do not necessarily indicate that he is a Scotchman.

\* \* \*

Alumnus—Your poem, "Give Me Back My Dreams," has been received. Had you kindly sent us a stamped and addressed envelope we would at once have complied with your request.

C. L.—We would suggest that the best kind of a wife for a vegetarian is a grass widow. Next please.

\* \* \*

M. Tell the young man that if he wants you to call him by his Christian name you have no objections at all. At the same time tell him that you admire his surname very much. It's wonderful what effect a little hint like this sometimes has.

\* \* \*

Finance—We scarcely like expressing an opinion as to whether man or woman is the more susceptible of being bribed. We admit that it has been said that every man has his price. At the same time it cannot be denied that every woman has her figure.

\* \* \*

W. L.—Of course men are not supposed to know very much about culinary matters, but you ought to know better than to suggest that some cows give beef tea in the same manner that others give milk.

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## Big Game Hunting in the North-West.

---

### I

You often read in Magazines  
About those thrilling hunting scenes  
Away out West.  
You'd think that game was swarming there  
Those wolves and elk and moose and bear,  
And all the rest.

### II

And yet, despite those magazines,  
We lived for weeks on pork and beans;  
And though we'd walk  
With guns through woods, in every way,  
We'd all return at close of day  
To beans and pork.

### III

Thus, huge excitement always started  
At things which in the least departed  
From daily habit.  
So just imagine, if you can,  
The furor, when in Brownie ran,  
And screamed "A Rabbit."

### IV

We'd brought no shot-guns out to camp,  
For fear they'd suffer from the damp  
Which filled our tent.  
But Van. snatched up a .44,  
And started for the open door,  
On slaughter bent.

### V

We followed. There the mighty brute  
Sat stonily and chewed a root.  
Then Van., heroic,  
Took one step forth and five steps back  
To brave the fiery beast's attack.  
But it was stoic.

### VI

Each step back the hero went  
His noble courage higher sent,  
Until at last,  
(Seeing the smiles on our faces)  
He quick returned those last five paces,  
All tremors past.



## VII

The beast, intent on mastication,  
Failed to note the situation  
His doom foreboded.  
Van. raised his gun and pulled the trigger,  
While Brown and I suppressed a snigger.  
It wasn't loaded!

## VIII

He rectified the slight mistake,  
And once more coolly tried to make  
The beast immortal.  
This time the shot was plainly heard.  
We jumped. The rabbit hardly stirred,  
But seemed to chortle.

## IX

Van. shot again, and this time I  
Distinctly saw it wink its eye,  
And Van. got furious.  
Twice more the trusty weapon roared,  
But only made the rabbit bored  
Instead of curious.

## X

Then Brown grabbed up the Colt and said,  
"By Gad, I've seen and heard and read  
Of many a shot;  
But, Van., your shooting beats the band.  
Van. only answered; 'You be d——d.'  
He seemed quite hot.

## XI

He soon regained his self-possession,  
When Brown let off, in quick succession  
Three feeble shots.  
The rabbit curled his lip and smiled  
And this time Brown was getting wild,  
And saying lots.

## XII

I think I'd better mention here  
Between ourselves, my readers dear,  
To save your time;  
That Van. and Brown have never done  
A thing, worth telling, with a gun,  
Compared with mine.

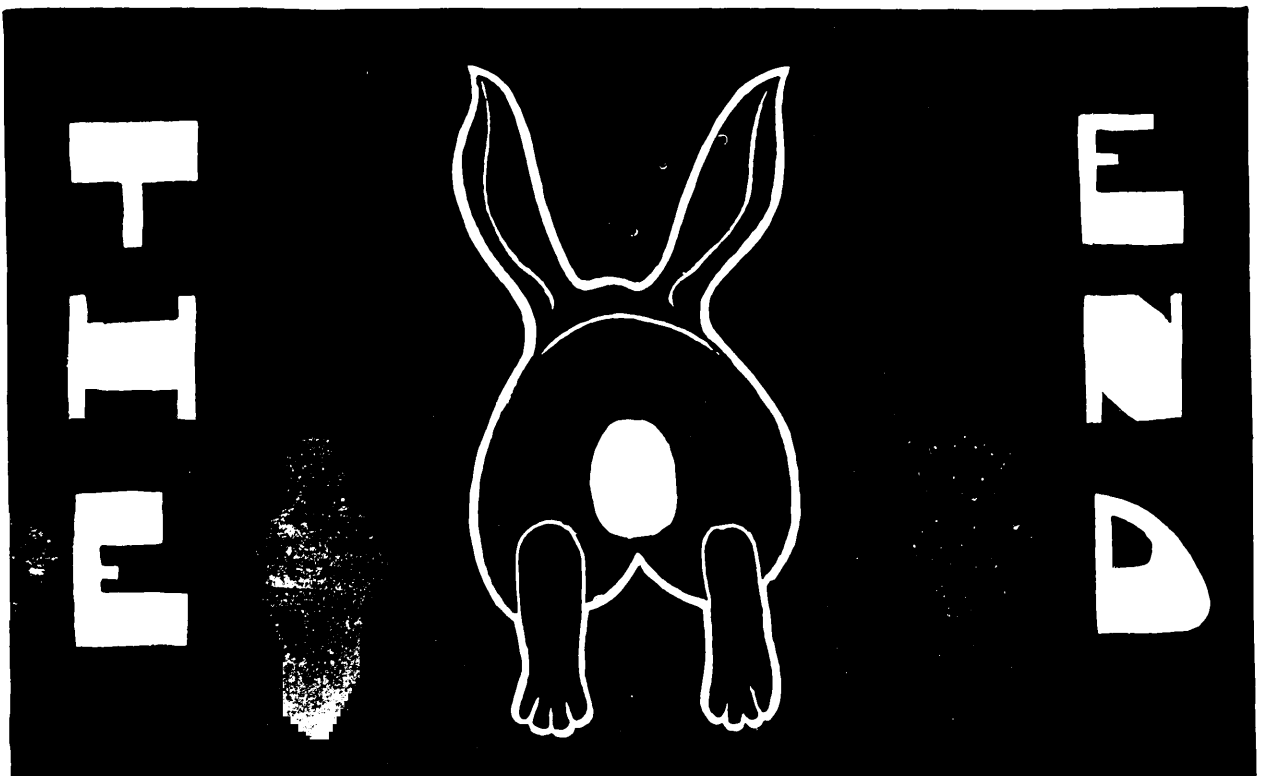
## XIII

And so I took it in my hand  
The while Van. cursed and Brownie—er—coughed.  
I sadly smiled  
To think that I should shortly aim  
A shot which would for ever tame  
That spirit wild.

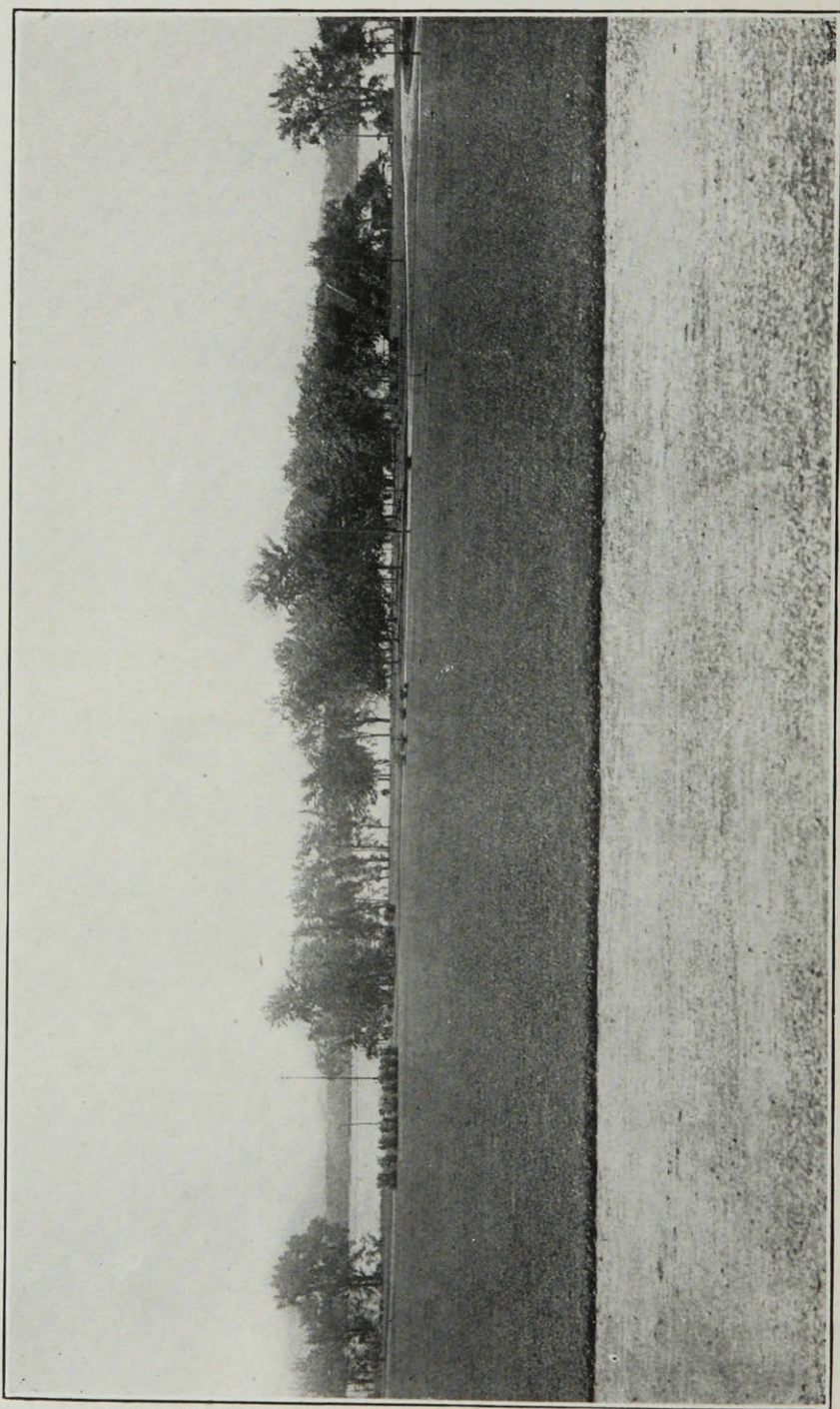
## XVI

Although I mention it, who shouldn't,  
I really must admit, I couldn't  
Miss such a very easy shot;  
And so I fired, with steady fist,  
And—Great Jerusalem—I Missed.  
I fear it's late; I'd better stop.

R. S. K.







THE OTTAWA, FROM THE COLLEGE.



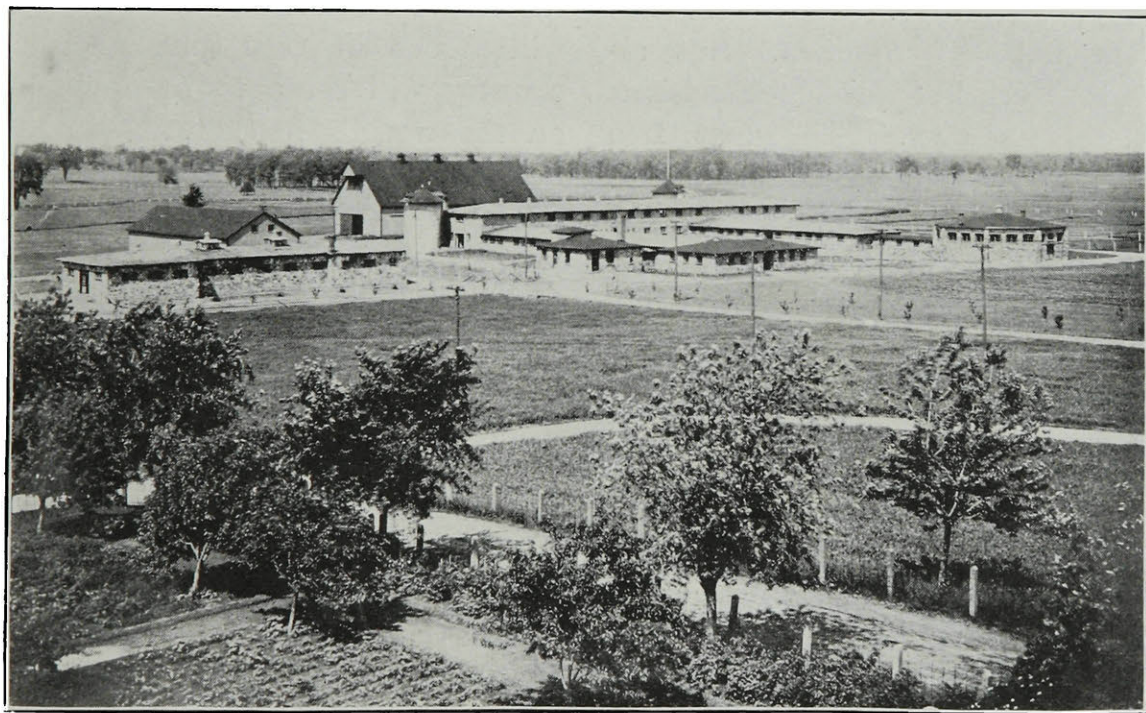
## Canadian Agriculture of To-Morrow.

By H. S. ARKELL, M.A., B.S.A., Assistant Live Stock Commissioner to the Dominion.



THE voyages of adventurers in quest of new lands precede, as a matter of course, the movement of peoples in search of new homes. In like manner, the days of the pioneer are prior to the periods of continued settlement. History has gathered much of romance and many narratives of fascinating adventure into

ple, whose numbers have continually taxed the capacity of her territories to maintain. Great Britain has for years depended on the surplus markets of the newer countries of the world for the provisions which she requires. France, Germany and Austria have of late had to recognize the stress of narrow markets, as the voice of the working classes has risen in complaint of tariffs, to



THE CATTLE BARNS, STABLES AND JUDGING ARENA, MACDONALD COLLEGE.

the annals of the great migrations which, out of the ancient, have made the modern world. Central and Northern Europe, like America, were at one time practically unknown to civilization. To-day, Europe is as a garden, and its kingdoms count their populations by millions, where, but short periods ago, they numbered them by hundreds of thousands. Italy has become too small to feed the new generations of her peo-

ple, whose numbers have continually taxed the capacity of her territories to maintain. European land, although cultivated and farmed in the most intensive manner obtaining in any part of the world, yet produces an altogether insufficient supply of the necessities of life for the increasing population. Great Britain, alone, imported last year 648,653 tons of meats of the various sorts, including, with that shipped in the frozen and chilled condition, such live



animals as were forwarded on foot. Germany has already partially met the demands of her people by lowering her tariffs, in order to induce foreign producers to seek a market there. Within the past few months, Austria has seriously discussed the question of her food supply. There has been more than romance in the conditions which have moved multitudes of people to seek the open areas of newer countries, where lands and waters and forests gave promise of unexplored resources and abundant harvests.

The newer countries are, however, already becoming old. America was the hope of Europe. The West has been the hope of America. But already the West has developed nations almost, of its own. The great free territories to the north and south of the 49th parallel, which, within the memory of our own generation, were still the homes of the wild native life original to them, are now being filled up year by year by the throngs of human-kind gathering from many nations of the earth. The immigrants into Canada for the past six months ending Sept. 30th number 210,361. Although for six months only, this is 2000 more than the total for the whole year to March 31st, 1910, and 64,000 more than the total for 1908-09. Not the least significant fact is that, of this number, 78,100 or more than a third of the total are immigrants from the United States. This increase in the immigration to Canada gives point to our recognition of the evident decrease of the supply of available land.

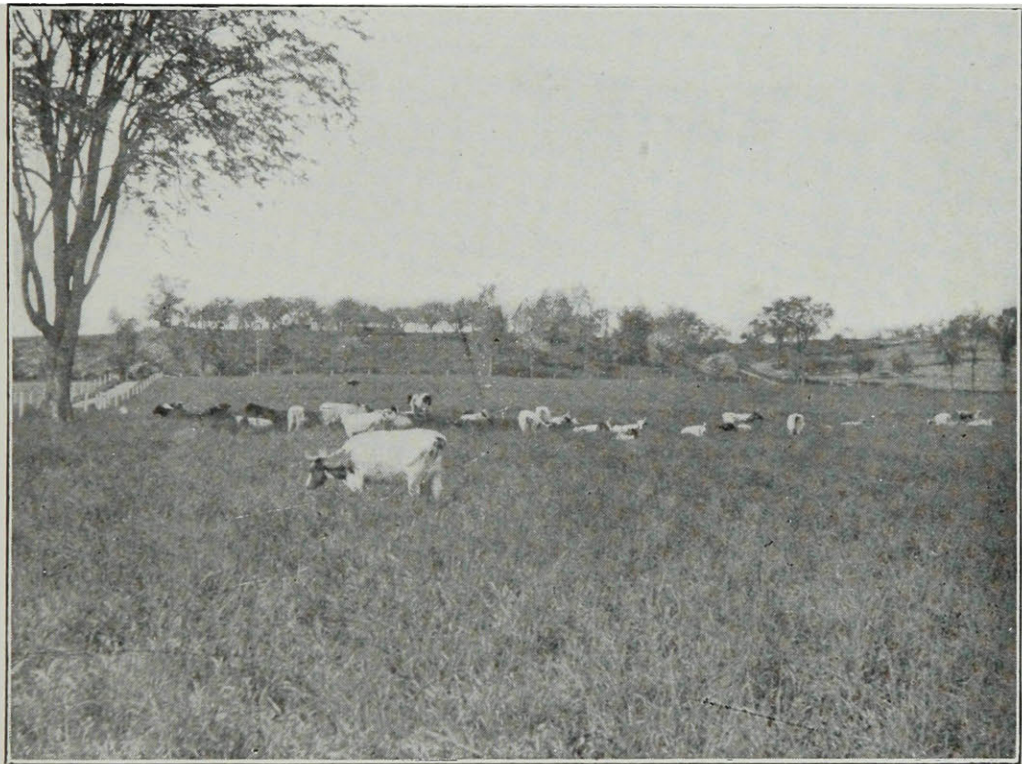
There are other evidences that point in the same direction. The American North West has already found it profitable to grain-feed and finish its own cattle, sheep and hogs, a situation which

tells of the passing of the ranching industry. Already, in our own Canadian West, there have appeared a number of influential advocates of the system of winter-feeding export and butcher cattle, and more and more intensive systems of agriculture are continually being adopted. The bearing of market conditions upon the question under discussion furnishes further and abundant proof of the truth of our argument. The decline in the export of food products from the United States has occasioned serious thought in that country. It has been carefully estimated that, in from five to ten years' time, the home market of the United States will absorb all its output and that the country will cease to be a competitor on the world's market. Again, it has been stated that the other great producing countries with a surplus to export, including the Argentine, Australia and New Zealand, have about reached the limit of their capacity and that they cannot be expected, in the near future, to increase the amount of the products which they have annually been accustomed to contribute. With reference to Canada, figures are not wanting to indicate the decline in her export trade, but the high price of food products, during the last year, offer sufficient evidence of the buoyancy of the home market, and of the fact that consumption within the country has now to be considered the most important feature of Canadian trade.

Herein is revealed the great prospect which may well kindle the enthusiasm of all who have devoted or would devote their energies toward the development of agriculture in Canada. There are urgent economic reasons for any encouragement that may be given toward increasing the available food sup-

ply in this or any country. That the standard of living has been lowered, owing to the high price of food products, not only in thickly populated European countries, where the very poor are legion, but even in America, where poverty is less evident, has been demonstrated all too clearly within the past year. Unless civilization can successfully undertake to lift the burden of poverty and maintain the standard of living at a high level amongst the less favoured classes of its society, there

a leading place amongst her competitors on the world's market, are more than worth striving for. Great Britain gained her supremacy through her countless manufactures and through the magnificent trade which she built up about them. It would appear a natural thing that Canada should attain position through the development of the unlimited possibilities of her soil in the production of a food supply that shall be the common asset of all the people. Herein is scope for the oppor-



THE MACDONALD COLLEGE FARM AYRSHIRE HERD AT PASTURE.

must inevitably follow a deterioration in the morals and customs of its peoples. It may be that Canada has an economic mission to fulfil to the older nations, which have continued to send forth their children to this new Land of Promise, and that in accepting this duty she will achieve the high nationhood to which her best sons have set their hopes.

Aside, however, from any ethical considerations, the immense advantages which Canada may derive by securing

tunities, which the resources in the immense tracts of fertile land have endowed us with as a birthright. Herein is a task to which the men of Canada may well set their hands. Thus, I conceive, will dawn the to-morrow of Canadian agriculture.

There are those who consider this to be the inevitable destiny of our country. Even though it become only a part of the national enterprise of the future, it can never be an unimportant part, since the most tangible possibilities

which the country possesses, point toward natural expansion in this direction. The question remains as to how it may be accomplished. The fundamental difficulty, which must always confront any and every effort directed toward increasing or controlling production on land, arises out of the infinitely great number of units which are comprised within the interests with which any such effort would have to be associated, and which are represented, in fact, by the individual farms of the country. The businesses of manufacturing or railroading or shipping are in general related to, and in consequence centre round, a few great names or a limited number of big establishments, the similarity of whose interests creates a common meeting ground for the fashioning of agreements which may operate to the mutual advantage of the contracting parties. The united action of such enterprises has, in not a few instances, directed the policies of governments and determined the settlement of debatable questions in a manner advantageous to themselves. No co-operative plan of organization, big enough for a country such as ours, has ever yet been devised, which would render possible, in a practical way, the concerted action in any definite movement of the innumerable communities comprising our great rural population. That such is to be an end to be desired will not be questioned, at least by those who are seriously concerned with the interests of Canadian agriculture. The business of farming is being organized in just such a way in certain of the smaller countries of Europe, and with immeasurable advantage to the individual owners of the farms, resulting in increasing the prosperity and in establishing the credit of the people as a whole. The

history of this movement, in a country whose name is too well known to need mention where, out of poverty, both of soil and of other resources, has been built up such a substantial success as, of its kind, has not often been duplicated, bears significant lessons to agriculturists of all the world. When we can build up such an organization in Canada and see it undertaking such a task as has already been outlined, the country will have set itself to the accomplishment of a mission worthy of its existence, and will have the attainment of such position and prestige within its grasp as to satisfy the ambition of a young and growing nation.

This will be a business enterprise and perhaps too utilitarian in its purpose for many. Yet it is not impossible to associate utility with education and culture. King Henry the seventh is remembered as one of the great business kings of England, who, by the shrewdness of his policy, maintained peace, encouraged industry, and gathered wealth into the coffers of his subjects and himself, yet he built the chapel dedicated to his name, perhaps the finest of all the chapels of the world-famous Abbey of Westminster. Nothing but a systematic and consistent business programme and of a scope big enough to include, within its aims, the confines of the country, can achieve for Canada such results as would be comparable to those obtained by the policy of England's long dead king, or even of our small but progressive European rival of to-day. It will be the work of a generation, but such work as the young men of our agricultural colleges may count themselves fortunate to have the opportunity to undertake.

Again, how may it be accomplished? The discussion of this question is too

far-reaching to allow that it be included in this article, but whatever else may be lacking, the one thing indispensable is that men may be found throughout the length and breadth of the country to lead strongly and efficiently in the life of each community, that it may, without haste and without waste, accomplish each its own part in the purpose of the whole. Victor Hugo voices the same thought in his description of the work of Father Madeleine as Mayor of M. "A good mayor is useful, a man should not recoil from the good he may be able to do." I know of no way that is likely to prove so effective in securing unification of the farming interests throughout the country and in promoting progressive action in a definite direction, as in the organization of separate communities under capable generalship. It is related of the late Premier Mercier that at one time he said, "If I could get the men I want and

place one in each of the parishes of the province, I should be able to accomplish something for Quebec agriculture." Nothing will so strengthen the hands of the farmers everywhere as co-operative endeavour. Nothing will develop their capabilities and that of the farms they work in like degree as the inspiration of successful example. Much can be undertaken through outside sources to promote the ends of which we have spoken, but these must fail of enduring success unless and until the great body of people have assumed the responsibility of their own development. I know of no finer outlook for the young men of our agricultural colleges, trained as they may in observation, steadied in principle and deepened in thought, than in the task which has here been very inadequately suggested, but the accomplishment of which may very well involve the establishment of our national prosperity.

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## American Respiration Calorimeters.

By J. F. SNELL, Ph.D., Professor of Chemistry, Macdonald College.

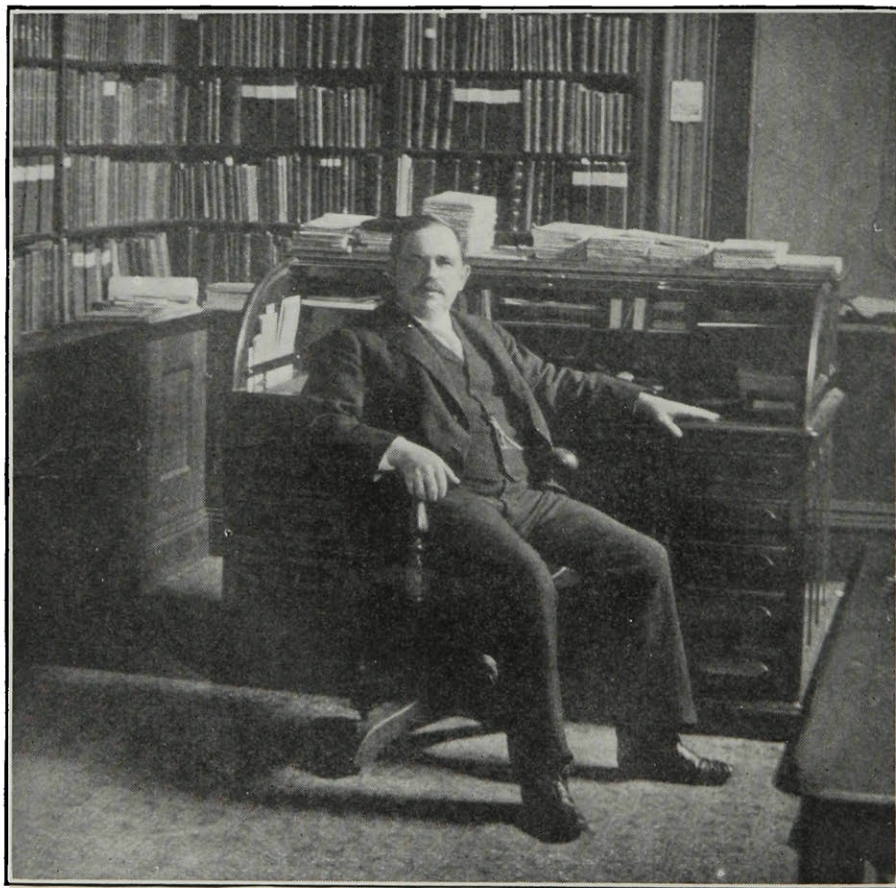


AN animal calorimeter is an apparatus for determining the amount of heat given off by the animal.

A respiration apparatus is a device for measuring the products of respiration, viz. carbon dioxide and water. A respiration calorimeter is a combined calorimeter and respiration apparatus.

through the nose and expelled, by way of the mouth, through the absorbing system. In more modern representatives of this type of apparatus, a mask covers nose and mouth, and valves provide for the alternate admission of air and emission of the breath.

Among the disadvantages of the tube type of apparatus are the interference



PROFESSOR W. O. ATWATER.

Animal respiration apparatus has been of various designs, but the most important, if not indeed all the forms, can be classified as elaborations of two types, the tube type and the chamber type. The most primitive representative of the former class consists of a tube held in the mouth and connected with absorption apparatus for water and carbon dioxide. The breath is drawn in

of the apparatus with the normal respiration, due partly to the resistance offered by the apparatus—a resistance which can be minimized but never entirely eliminated—and partly to the consciousness of the subject. Moreover, the periods of observation are limited by both the power of endurance of the subject and the capacity of the absorbing reagents for the respiratory

products. Again, this type of apparatus collects only respiratory products proper, and ignores the products of perspiration.

These disadvantages are absent from the second type of respiration apparatus—the chamber type, the primitive form of which is historically a bell-jar, though, logically, a tight box would serve equally well. The animal lives a normal life within the chamber, the products of both respiration and perspiration are collected, and if provision is made for an adequate supply of air or oxygen, the experiments can extend over a period of many days.

Successful instruments, combining the features of an animal calorimeter and respiration apparatus, are comparatively recent, though an attempt in that direction was made as early as the fifties of the nineteenth century, by Hirn, a French engineer, with the purpose of determining whether the law of conservation held good in the animal system. It was not until 1891 that experiments involving a complete determination of the balance of income and outgo of both matter and energy in the body of an animal were described by Rubner. Such experiments involved the chemical analysis and the determination of the heats of combustion of the foods and excreta, as well as the collection and measurement of heat evolved by the animal.

The late Prof. W. O. Atwater, of Wesleyan University, Middletown, Conn., whose success as an investigator was largely due to the boldness with which he embarked upon large enterprises, ventured to attempt the construction of a respiration calorimeter on the Pettenkofer principle of a size suitable for experiments upon man. He associated with himself Prof. E. B. Rosa, now of the Bureau of Standards,

Washington, but then Professor of Physics in Wesleyan, and together they designed an apparatus, which not only departed radically in some of its calorimetric features from all the earlier forms of animal calorimeters, but, as a calorimeter, was distinctly superior to, and, as a respiration apparatus, at least the equal of, any previously constructed. This apparatus was used for six years, i.e. up to 1902 in 44 successful experiments upon five subjects, covering in the aggregate, 134 days.

There are three distinct types of apparatus—the Atwater, the Armsby and the Benedict, which is an adaptation of the Regnault-Reiset construction. In their calorimetric features these three are identical. For the principle of heat insulation employed, all three of these chemists are indebted to the Physicist, Prof. Rosa. To prevent any loss of heat through the sides of the calorimeter chamber, he contrived to keep the space immediately surrounding the chamber at exactly the same temperature as the chamber itself. This was accomplished by enclosing within this space an elaborate collection of wires and tubes. When delicate thermometers, attached to the walls of the chamber and to those of this surrounding space, indicated that the air space was warmer than the interior chamber, cold water was passed through the pipes. When the thermometer indicated that the air space was a few hundredths of a degree too cool, an electric current was passed through the wires to warm it up. Our readers will understand that the management of such an apparatus requires the constant attention of an observer, who sits at a table beside the apparatus, taking frequent readings of the electrical thermometers and turning on water and electricity as required.

All possibility of any income or outgo of heat through the walls of the chamber having been eliminated by this ingenious device, the heat given off by the man or animal is taken up by a current of water which passes through a copper pipe, hung within the chamber itself, along the ceiling. The pipe is surrounded by a set of discs similar to those on the coils of an automobile cooler. These have the effect of increasing the rate of absorption of the heat by the water. By measuring the volume of water thus passed through the respiration chamber and noting its temperature as it passes in and again as it passes out, the observer is able to form an accurate estimate of the quantity of heat given off by the imprisoned subject.

The chamber itself is, in the Atwater calorimeter (for men), seven feet long, six feet four inches high, and four feet wide. In the Armsby apparatus (for cattle), it is ten feet four inches long, six feet high, and four feet eight inches wide. Within this narrow cell, the man or animal can spend hours or days without material discomfort. The writer himself, more than once, served a term of ten days and nights within the Atwater "box." A cot, table and chair, all folding, constitute the furniture, with the addition, in "work" experiments, of a stationary bicycle upon which the subject daily makes century runs.

Food, letters, and other articles can be passed in and out through a large tube which passes through the walls and which is so constructed that when one end is open the other is closed. A telephone enables one to talk with those outside, and a window (hermetically sealed of course), admits light. Air is being continually pumped through the

chamber and the temperature is held absolutely constant. The only discomfort of any consequence is the impossibility of taking a bath, for, since the water exhaled is being measured, no water except that which the subject is to drink may be admitted to the chamber. In a way, this is not so serious a matter in the work of experiments as in those in which the subject is at rest, for while at work one exhales water vapour so rapidly that sufficient condenses on the heat-absorbing water pipe at the ceiling of the chamber to be collected and used to wash the hands and face. Thus one bathes in dew distilled from one's own breath. In the "rest" experiments, the best one can say is that, like hanging, "it is not so bad when you get used to it."

It will be understood that, for experiments such as Professor Armsby's upon animals, which are not educated to an appreciation of scientific methods, many auxiliary devices had to be engrafted upon the design of the human calorimeter. Provision had to be made for the weighing of the ox within the chamber, for the admission of more bulky food, and for the collection and removal of the excreta. All of these difficult problems Professor Armsby has successfully solved.

From the many valuable results obtained, with these elaborate pieces of scientific apparatus, we single out a few of those possessing greatest popular interest. The prime purpose of both Rubner and Atwater, in undertaking the construction of their respiration calorimeters, was the same as that which dominated Hirn—to determine whether the Law of the Conservation of Energy holds in living organisms as it does in the inorganic world. That it does so hold, these American calorimeters may

claim to have demonstrated to a degree of precision, which their predecessors were incapable of attaining. That the fatiguing struggle with a difficult mental problem is not "work" (or at any rate not hard work), in the physical sense of the term, was demonstrated by an experiment in which the income and outgo of energy of a student of physics was measured in his hours of idleness and again while he was engaged in calculations and in the study of an abstruse German treatise upon physics. It was found that he actually oxidized a little less carbon while at work than while at rest; whereas, if physical energy had been converted into mental, he should have produced more carbon dioxide while at work—just as he does when physical energy is converted into muscular work. That alcohol, taken as a part of the diet, is oxidized and yields heat like genuine foods has been proved with more accuracy and conviction than was previously possible. That for the conversion of chemical into mechanical energy, the human body is more efficient than a steam engine has been demonstrated. Of peculiar interest, in view of Horace Fletcher's cult of thorough mastication and insalivation of food in the belief that this conduces to completeness of

digestion and to consequent economy, are some experiments made upon a subject described as "H. F.," who "for years has practised masticating his food to such an extent as to secure unusual thoroughness of combination and insalivation." It was found that there was no material difference between the proportions of nutrients absorbed from the food by him and those absorbed by other subjects. It was also found that the restricted diet upon which he claimed to live was not sufficient for maintenance during his sojourn of three days in the calorimeter. Although persuaded to take rather more food than he himself would have chosen, he lost both flesh (protein) and fat during his imprisonment.

From some of the experiments on cattle, Professor Armsby has inferred that an ox fed on clover hay uses about one fourth of the food value of the hay in the work of digestion itself, leaving three fourths "available for maintenance." The total heat evolved daily, by an ox weighing 1250 pounds, was about 10,500 calories, when he was standing seventeen hours and lying down the rest of the day. Thus, while his weight was about eight times that of an average man, his heat production was only a little over four times that of a man at rest.

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## The Trappist Monks at Oka.

**N**O more interesting link with Old World ideas, traditions, and history, can be found in the Dominion of Canada than the devoted band of men known to the outside world as the Trappist Monks at Oka. Situated close to the Lake of Two Mountains, in the Province of Quebec, they offer to the inhabitants of the busy world from which they have forever shut themselves off, an example of single-hearted unselfishness, industry, and purity of life which must extort respect from one and all.

The history of the Order is a most interesting one. For the community at Oka is by no means the only one of its kind in the world. Nor did the Order commence in 1881, the date of the Oka settlement. It was in 1098 at

Citeaux, in France, that the Order was founded, whence arose their real name of Cistercians. The objects of the Order are praying and penance. In 1881 the anti-clerical party in France caused the expulsion of the Trappist monks, and they migrated to their present home at Oka, receiving a grant of land from the Sulpician Order. It is interesting to note, however, that there are still 25 monasteries of the Order in France.

The first monastery was built with funds which the monks brought with them. It was unfortunately destroyed by fire in 1902, but was immediately

rebuilt. The building accommodates 100 monks altogether.

As most of our readers are aware, there is also attached to the monastery an Agricultural school, founded in 1893, and staffed by instructors from Laval University and Guelph. There can be obtained a three year course in Agriculture, culminating in a B. S. A. degree, conferred by Laval University. There are at present in the school 83 students, and these are being taught by six monks and five laymen. The large

tract of land cultivated by the settlement affords a magnificent opportunity for a practical training. The subjects which they study are most varied in character, varying from Botany to Road-making, and from English Grammar to Veterinary Science.



MONKS GOING TO WORK.

But this is a digression. The purpose of this article is with the monastery and those who have irrevocably taken the vows of the Order.

To convey forcibly an idea of the absolute sincerity, and single-hearted devotion of the monks, no better way can be adopted than that of describing a day in their life—not a fast day or an exceptional day, but just an ordinary working day.

At two o'clock in the morning the strident clang of the chapel bell summons them from the land of dreams. A few minutes later they file silently into their places in the almost totally dark



chapel, to chant the first office of the day. Faintly at first, the service which has been sung by the Order since the twelfth century is intoned, swelling gradually as it progresses.

Half an hour later the first daily office is over, and the monks kneel silently till the chapel bell announces the passing of another hour. Then another office, consisting of matins and lauds, is begun, lasting for another hour.

At the conclusion of the Grand Office, the lay brothers file out to the daily work to which they are assigned. They go to the creamery, the wine press, poultry or other live stock, at 4 a. m.

(and some of them even at 3 a.m.), leaving their fellows and the choir priests to continue their devotions and offer special prayers on their behalf until nearly five o'clock.

And now as the light broadens, the picturesque figures of the monks, clothed in long brown robes, thick and heavy, fastened up so as to facilitate manual work, go about their daily task in unending silence. For this is their most famous and most striking characteristic, their perpetual taciturnity. Only the very few whose duties bring them into contact with the outside world are allowed to speak. For the others—silence—save the few words allowed by the 'Rule.'

At 5.30 the priests again go to the chapel for another office called the Prime, after which is held the daily chapter. At 6.15 the monks breakfast

on six ounces of bread and a cup of tea or cider. But between September and Easter no meal whatever is taken until nearly noon.

High Mass is celebrated in the Chapel at 7.15, and after this the priests also go to work in the field, even the Abbot using his hoe or other implement of toil. At 11 o'clock dinner is served in the Refectory, consisting of vegetable soup, boiled vegetables, bread and water, served in two metal bowls and eaten with a wooden spoon and fork. Every other day boiled rice and milk is served, and very occasionally fruit. No meat whatever is given.



AT WORK.

From 12 till 1 an hour's siesta is granted to the monks, when they retire to the dormitory and rest on boards, to which are strapped hard straw mattresses. They are not permitted to remove their clothing, even at night—a most severe mortifi-

cation in the heat of summer.

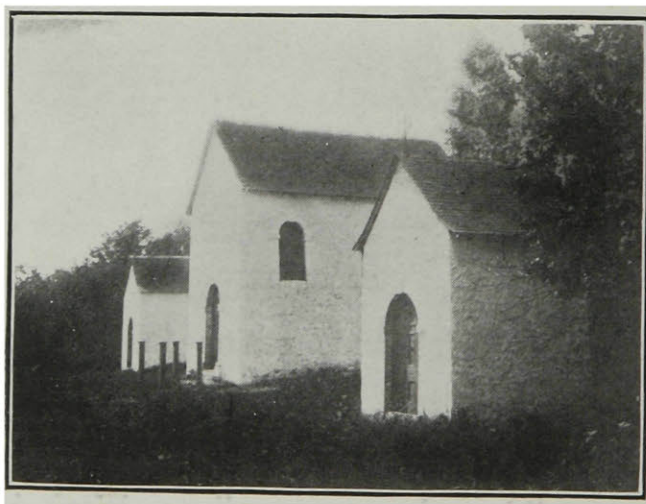
At 1 p. m. another office is said, called the 'None,' after which they retire to the cloister and spend some time in reading. Work is then resumed until 5.15, when vespers are said in the chapel. Supper is then served in the refectory, and is much the same meal as dinner, and after the last office, the Salve Regina is held at 7.30, the monks retire to bed.

On Sundays and Feast Days the daily programme is even more exacting, for the monks rise at 1. a.m. and three hours are spent in chanting the offices in chapel.

In spite of this life of privation and self-denial the monks wear an aspect of happiness and tranquillity rarely to be found in the more self-indulgent people who are not Trappist monks. Nor can the life of a Trappist monk be looked on as a selfish, useless existence, looked at from the low standpoint of the materialist. For every year 100 tons of the monks' famous cheese is made and sold, and agricultural produce by

the carload is daily sent out. Moreover scores of farmers' sons receive an education in profitable farming.

But the Trappist monks think little of this. They remember that theirs is the Order of prayer and penance, and that it is their mission to intercede with Heaven on behalf of the erring millions whose eyes are fixed on the things below and not on things above.



THE CHAPELS ON MOUNT CALVAIRE.